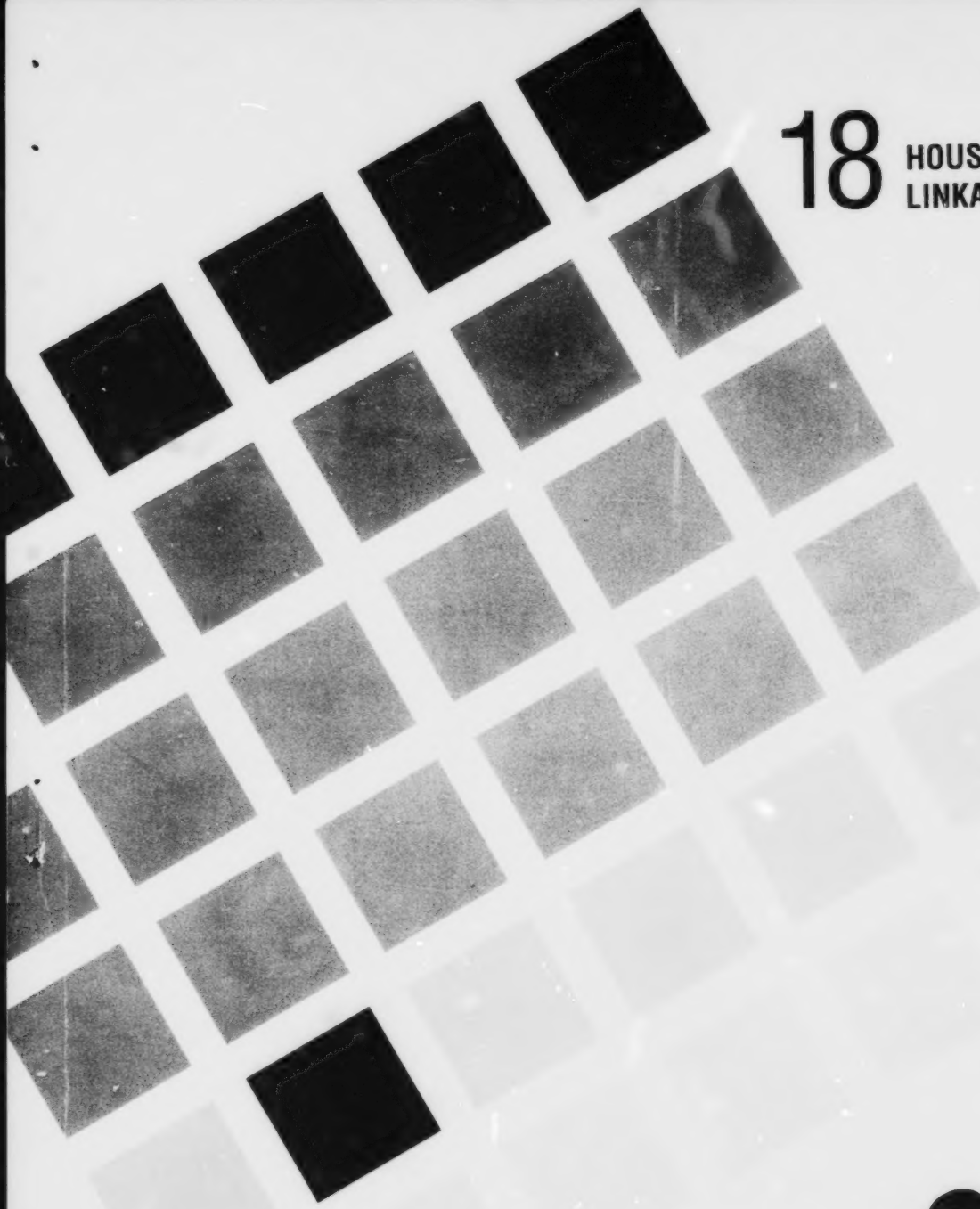
18 HOUSING-EMPLOYMENT LINKAGE STUDY



Cityplan '91

City of Toronto
Planning & Development
Department

Robert E. Millward
Commissioner

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HOUSING-EMPLOYMENT LINKAGE STUDY

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City of Toronto
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Table of Contents

Executive Summary i

Acknowledgements v

1. Introduction 1

2. Underlying Concepts 3
- 2.1 Labour Force and Employment 4
- 2.2 The Housing Market 5
- 2.3 Affordability of Housing 7
  - 2.3.1 Affordability of Rental Units 7
  - 2.3.2 Affordability Relationships 8
  - 2.3.3 Conclusions 9
  - 2.3.4 An Operational Definition of Affordability 9
- 2.4 The Broader Policy Environment 12
  - 2.4.1 The Federal Level 12
  - 2.4.2 Ontario Housing Policy 13
  - 2.4.3 The Position of Municipal Government 14
- 2.5 Commercial Development and the Demand for Affordable Housing: A Synthesis 15
- 2.6 Commercial Development and the Supply of Affordable Housing 16

3. Linkage Fee Systems 19
- 3.1 Municipal Policy Tools to Address Housing Affordability 19
  - 3.1.1 General Revenue Enhancement 19
  - 3.1.2 Exactions 20
  - 3.1.3 Incentives 22
- 3.2 Current Linkage Fee Applications 22
  - 3.2.1 Mandatory Linkage Programs 23
  - 3.2.2 Incentive-based Linkage Programs 23
  - 3.2.3 Negotiated (Mandatory) Linkage 23
  - 3.2.4 Municipalities Rejecting or Considering Linkage Fees 24
  - 3.2.5 Summary of Existing Practice 24
- 3.3 The Incidence of Linkage Fees 24
- 3.4 Policy Formulation Decisions 25
  - 3.4.1 For which land uses can a linkage fee be empirically established? 25
  - 3.4.2 For which land uses, and at what level, does the municipality wish to establish a fee? 26
  - 3.4.3 Should the level of the fee be determined in relation to the market impacts, the need for affordable housing, or both? 26
  - 3.4.4 Should the fee be a one time charge or paid over a number of years? 27

3.4.5 Should in-kind payments of value equal to the fee be accepted by the municipality ? 27
3.4.6 What type of in-kind fees will be acceptable, units or land? 27
3.4.7 Does the municipality have the authority to establish a linkage fee? 28

4. Methods of Estimating Linkage 29
4.1 Methods Used in Other Studies 29
4.1.1 San Francisco 30
4.1.2 Boston 31
4.2 Improved Method Developed in this Study 32
4.2.1 Important Links to Estimate 33
4.2.2 Turning Theory into a Testable Model 34
4.2.3 Indirect Versus Direct Estimates 34
4.3 Summary of the Method Used 35
4.3.1 The Model 35

5. Linkage Estimates 37
5.1 Introduction 37
5.2 The Effect of Commercial Development in the City of Toronto on Lower-Wage Employment in the Toronto CMA 37
5.3 From Lower-Wage Employees in the CMA to Housing Units in The City 40
5.4 Costs of Meeting Profound Need and a Linkage Calculation 43
5.5 Beyond Profound Need 44

6. Projections to 2001 48
6.1 Nine Scenarios 48
6.2 Proceeds of a Linkage Fee 51

7. Impact Analysis 53
7.1 The Existing Toronto Commercial Market 53
7.2 The Fiscal Policy Environment 55
7.2.1 Property Tax 55
7.2.2 Development Charges 56
7.2.3 Commercial Concentration Tax 56
7.2.4 Linkage Fees 56
7.3 Impacts 57
7.3.1 Impact on Growth of Commercial Space in Toronto 57
7.3.2 Fiscal Impact of Reduced Commercial Growth .. 58
7.3.3 Impact on Bonus Zoning 58

7.4 Conclusions 59

8. A Linkage Fee System for the City of Toronto 60
8.1 For which land uses can a linkage fee be empirically established? 60
8.2 For which land uses, and at what level, does the municipality wish 60
8.3 Should the level of the fee be determined in relation to market 60
8.4 Should the fee be a one time charge or paid over a number of years? 60
8.5 Should in-kind payments of value equal to the fee be accepted? 61
8.6 What type of in-kind fees would be acceptable, units or land? 61
8.7 Does the municipality have the legislative authority to establish a linkage fee? 61

9. Recommendations 62

APPENDIX 1: Current Affordability Measures 64

APPENDIX 2: Data Sources 67

APPENDIX 3: Converting Variables to Measures: Data Requirements, Sources, and Adjustments 69

APPENDIX 4: An Alternative: The Direct Method Analyzing Waiting Lists 70

APPENDIX 5: Details of the Regression Model 72

APPENDIX 6: A Spreadsheet for Projecting Incremental Housing Requirements 75

APPENDIX 7: The Linkage / Other Revenue Tradeoff 79

APPENDIX 8: Existing Linkage Programs 80

Executive Summary

When an office building, hotel, or shopping mall opens for business, people are hired to do jobs ranging from cleaning to selling to managing the enterprises located in the new space.

In turn, these people form households, purchase goods and services, and generally contribute to the life of the community. Their economic activity generates work for other people who likewise form households and purchase goods and services.

All of these people need places to live. Some, however, may not find suitable housing at an affordable price.

This line of reasoning is known as the "linkage between commercial development and the need for affordable housing" or "linkage" for short.

The purpose of this study is to:

- measure the linkage between commercial development and the need for affordable housing in the City of Toronto
- design a linkage fee system, that is, a way of charging developers of commercial space a sum of money based on the measured linkage to provide a housing subsidy
- assess the impacts of a linkage fee for selected policy scenarios

The theoretical literature suggests that the economic base of a national financial capital like Toronto is closely tied to the business and consumer services offered by firms in the core of the city. As the economic base expands, office, retail, hotel and other service businesses require increasing numbers of workers, both in management occupations and in clerical, sales, and service occupations.

Research suggests that many of the latter occupations will offer relatively low wages and low job security. Part-time work will be common. Therefore, the housing problems of households headed by clerical, sales, and service workers will likely be considerable.

Housing affordability is a thorny policy issue. In this study, the authors present a range of findings based on three affordability criteria. Statistics Canada's Low Income Cut-Off (LICO) is used to measure *profound need.* Households with incomes below this level definitely require extensive financial assistance to live in the City of Toronto.

The affordability definition given in the Ontario Government's Policy Statement on Land Use Planning for Housing - that households with incomes below the 60th percentile should pay no more than thirty percent of income on housing - provides a measure of *full policy-defined need*. Finally, a similar definition based on the 30th percentile of the household income distribution provides a definition of *mid-range need.*

Policies that may be used by municipalities to support affordable housing objectives include general revenue enhancement, exactions, and incentives. Only incentives in the form of density bonusing are currently used in the City of Toronto for this purpose.

The impact of commercial development on affordable housing has been examined in a number of North American cities. Linkages were established by rudimentary empirical analysis in San Francisco and in Boston. The impact on the price of all rental housing (Boston) and the costs to bring all affected households within housing affordability bounds (San Francisco) produced linkages of $10.00-$12.00 per square foot (U.S. dollars, early 1980's).

Linkage fees were established in these cities at about one-half the linkage measured. These fees are imposed on specified types of commercial development and the proceeds are used to subsidize the construction of low cost housing.

This study examines the magnitude of linkage in the City of Toronto using more sophisticated methods than those used in previous studies. A linkage of between $6.16 and $19.71 (1990 dollars) per gross square foot of commercial space is established, depending on the degree of need to be addressed. The study proposes a linkage fee system based on these measures.

Several new directions were taken in the empirical analysis for the City of Toronto Linkage Study. The linkage estimate is more reliable than previous work as it was based on a multivariate statistical analysis of quarterly economic data from 1976 through 1989.

For each one million (1981) dollars in new commercial construction in the City of Toronto, twenty-nine additional clerical, sales, and services workers are employed in the Toronto Census Metropolitan Area (CMA). This estimate includes both direct and indirect employment *after the effects of other economic and demographic change have been taken into account.*

In recent years the annual average growth in commercial space [255,000 square meters per year at a cost of $142 million (1981)] has generated 4,100 additional lower-wage jobs in the CMA each year. About one-third of these workers live in the City and about fifteen percent will head households in profound need of housing assistance.

If growth continues at this rate, each year *127 new housing units* - 57 single and 70 family - will be required to meet profound need. *A one-time linkage fee of $6.16 per square foot of commercial space* would provide sufficient funds to build and maintain these units. Further analysis shows that the affordability definition in the Provincial Housing Policy Statement implies a linkage fee of $19.71 to assist linkage-related households with incomes below the 60th percentile of the regional household income distribution, including those in profound need.

Nine future scenarios are presented based on low, medium, and high rates of commercial building and the three levels of need that could be addressed. These projections show revenues from the fee as well as the number of units required over a ten year period.

The present supply of approved commercial projects would delay revenue from a fee system beginning on January 1, 1992 for about three years. Once currently-approved projects have been built, the revenue from a linkage fee would become a substantial fund available for affordable housing subsidy.

A linkage fee of between $6.16 and $19.71 would add between 1.3% and 5% to typical commercial project costs including land. At the low end, this is similar to the impact found in other major cities. A linkage fee of more than $10.00 per square foot, however, could have a serious dampening effect on the City commercial market.

There are eight recommendations:

Recommendation 1:

> Depending on the definition of need, there is a firm basis for establishing a linkage fee between $6.16 and $19.71 per gross square foot on all new commercial development in the City of Toronto.

Recommendation 2:

To mitigate against adverse impacts in the commercial real estate market, the fee should not exceed $10.00 per square foot.

Recommendation 3:

The fee should be designed to provide one-half the measured linkage for the appropriately defined need group.

Recommendation 4:

The fee should be assessed on a one-time basis and collected at the same time as building permit fees.

Recommendation 5:

The fee should be implemented in a manner complementary to density bonusing and other policies for providing public benefits in exchange for development approval.

Recommendation 6:

Once established, the level of the fee should be indexed to the Statistics Canada's Construction Price Index--Toronto CMA series. The basis of its calculation should be periodically updated as new census data become available.

Recommendation 7:

At the City's discretion, in-kind payments in land and/or housing units should be accepted in lieu of the appropriate linkage fee. The net value of such payments should equal or exceed the linkage fee due.

Recommendation 8:

Council should move to implement a linkage fee at the earliest possible date.

Acknowledgements

The City of Toronto Linkage Study would not have been possible without the full and unstinting cooperation of many professionals in the public and private sectors. The staff at the Ontario Ministries of Housing and Municipal Affairs and the City Planning and Development and Housing Departments deserve special mention as clients, advisors, and sources for data: John Gladki, Barbara Leonhardt, Joan Kilpatrick, Steve Dynes, Tom Ostler, Vykki Silzer, Steve Woodward, Chris Harling, Greg Stewart, Leslie Watson, Peter Viducis and Alan Meisner.

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We also received a great deal of insight and data from Statistics Canada and acknowledge the help of S. Seymour, who provided data on short notice. We also acknowledge the work of the Ryerson School of Planning students in the Employment Study Team of UPN 310.

Finally we wish to acknowledge the Government of Ontario and the City of Toronto whose joint financial assistance made the study possible.

Any remaining errors are those of the authors and not of the sponsoring organizations.

1. Introduction

During the Cityplan '91 review of the Official Plan for the City of Toronto, the need for affordable housing emerged as a central theme. Likewise, the rapid growth of the commercial core of the City is the backdrop to all Cityplan '91 efforts. The City Planning and Development Department hopes to have available a wide range of tools with which to address the housing problem, and one suggested by the actions of other rapidly growing cities is the *linkage fee.*

A linkage fee is a charge imposed on commercial development to provide a housing subsidy for households directly and indirectly associated with employment in new commercial space.

The School of Urban and Regional Planning at Ryerson Polytechnical Institute was the successful competitor in response to the City's call for proposals for a linkage fee study.[1] In its proposal the Ryerson team took on the responsibility of developing a empirically-based linkage fee system.

This study uses multivariate statistical analysis to establish the magnitude of the workforce generated by expanded commercial space. Then, using projections of commercial development growth, estimates of the need for housing assistance are generated.[2]

The linkage study team then develops cost estimates for two types of housing units (for single persons and for families). What results is the linkage fee necessary to generate the funds for that housing assistance. These results are shown for three rates of growth of commercial space and three definitions of need.

Chapter 2 is a summary of the urban economics and housing literature which offers the conceptual basis of a linkage and the factors that should be used to measure it. In Chapter 3, instruments that may be used to support housing objectives, experiences in other cities with linkage fees, and the details of a linkage fee system are discussed.

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[1]City of Toronto Planning and Development Department. "Housing - Employment Linkage Study: Terms of Reference" (November, 1989).

[2]These projections are from City research on employment, housing, and congestion. Nowlan, David and Greg Stewart. "The Effects of Downtown Population Growth on Commuting Trips" (December, 1989).

Chapter 4 discusses how linkage estimates have been made by others, how this study carries out the measurement, and the improvements offered in this approach. Chapter 5 presents the results of the multivariate linkage estimation, and resulting housing and costs projections.

Projections for nine policy scenarios are given in Chapter 6. Chapter 7 discusses the possible effects that a linkage fee system of the magnitude justified by the analysis might have in the commercial space market in the near and longer term.

A summary of findings and implementation issues are presented in Chapter 8. Recommendations for a linkage fee system for the City of Toronto are provided in Chapter 9.

2. Underlying Concepts

The linkage between commercial development and housing need depends on conceptual and empirical information drawn from four major sources:

The Structure of the Local and National Economies, specifically

- Changes in the structure of the labour force and rates of participation, especially among women.
- Polarization of incomes in service employment.
- Location/concentration of service employment.

Local Housing Market Behaviour

- General Characteristics of Housing Markets.
- Policy Environment within which the Market functions.

Affordability of Housing

- The proportion of the population with affordability problems.
- Changes in affordability relationships.

The Behaviour of Public Sector Decision Makers

- The broader policy environment, specifically the expenditure/revenue relationship.
- The position in the decision making hierarchy, i.e., decision makers vs. decision takers.

In the sections following, a brief review of each of these elements is provided. The goal is to provide some understanding of the theoretical basis for the variables which could be included in a complete multivariate model.

2.1 Labour Force and Employment

Commercial development is a physical supply response to growth in what the Economic Council of Canada defined as the dynamic services sector.[3] This includes: Transportation, communication and utilities, wholesale trade, finance, insurance and real estate and business services. The following is a general profile of the service sector in the Canadian economy.

- 90% of job growth in Canada since 1961 has taken place in the service sector.
- By 1988, 71% of all Canadian workers were employed in the service sector.
- The dynamic service sector accounts for 28% of total employment.
- Dynamic services rather than being footloose, as earlier thought, show a pattern of concentration in large cities. This is premised on the requirements of access to skilled labour, to complementary activities, and to a market.
- Changes in the labour force show a pattern of polarization that is fundamental and systemic. Virtually all recent employment growth has involved either highly skilled, well compensated and secure jobs or unstable and relatively poorly paid jobs.
- Part-time employment (less than 30 hours per week) rose from 4% in 1953 to 15% by mid-1980's.
- Since 1975, part-time work has accounted for 25% of net job growth in Ontario.
- The overwhelming majority of part-time workers are young, female, or both.
- Temporary help agency work has tripled in the 1980's. Most "Temps" are in clerical occupations and 70% are female.
- In general, part-time workers earn less on an hourly basis than their full-time counterparts.

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[3]Economic Council of Canada. Good Jobs, Bad Jobs. (Ottawa: 1990) The following discussion of service jobs is based on this study.

- These changes in the composition of the labour force have contributed to increased income disparity.

Based on the information summarized above it may be concluded that:

- New office development in Toronto will house primarily service-oriented activity.
- At least 30% of the newly employed will be low-paid part-time workers.
- 70% of these workers will be young, female or both.
- This pattern of labour force polarization with its bi-modal income earning characteristics is expected to worsen in the 1990's.

2.2 The Housing Market

Smith et. al. have recently argued that:

> although housing is a commodity that responds to market forces it has a number of special characteristics ... Foremost among [these] are durability, spatial fixity and heterogeneity ... and the extensive involvement of governments in housing and related input markets[4]

Comprehensive reviews of each of these characteristics are provided by several authors.[5] The general conclusions are:

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[4]Smith, L.G., K.T. Rosen & G. Fallis. "Recent Developments in Economic Models of Housing Markets " . Journal of Economic Literature. Volume 26, March 1988 pp. 29-64.

[5] Preston, Valerie, Robert Murdie and George Fallis. " A Profile of Rental Housing in Ontario: Statistical Overview". (Toronto: York University Institute for Social Research, 1989); Bourne, L. and John Hitchcock, eds. Urban Housing Markets: Recent Directions in Research and Policy. (Toronto: University of Toronto Press, 1978); Fallis, G. Housing Programs and Income Distribution in Ontario. Ontario Economic Council Report (Toronto: University of Toronto Press, 1980); Grigsby, W.G. Housing Markets and Public Policy. (Philadelphia: University of Pennsylvania Press, 1963); and Smith L.B. The Postwar Canadian Housing and Residential Mortgage Markets and the Role of Governments (Toronto: University of Toronto Press,

- That housing markets adjust in a stock-flow manner.[6] A combination of a relatively elastic demand for housing services and a relatively inelastic supply of housing determines price.

- The coexistence of extensive rental and ownership markets is a fundamental characteristic of housing markets.

- The housing market is subject to high transactions costs. These add to the price of housing and reduce consumption of housing.

- Housing and accessibility are purchased jointly. As the price of housing increases within the city, consumers will substitute reduced accessibility for amenity and will live outside the city.

- In Ontario the housing market is substantially affected by government policy. The existence of legislation that controls the rate of price change in rental housing (Rent Review), the decision to demolish or convert existing rental housing (Rental Housing Protection Act), the nature of the approval process and the unpredictable nature of direct government provision of subsidized social housing combine to make market adjustment complex.

An analysis of the Housing, Income and Family Expenditure (HIFE) data revealed that:[7]

- 11 of 19 CMA's and urban places in Ontario had rental housing vacancy rates of less than 1 percent; in Toronto in 1988 the rate was 0.2 percent.

- Rental starts as a percent of total starts in Ontario have fallen from 28.9% in 1983 to 14% in 1988. Condominium starts in Ontario jumped from 6% to 26% of starts over the same period.

- More recently, in Metro Toronto, rental starts were 7.4%, 8.6% and 11% of starts in 1986, 1987, and 1988, respectively, and

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1978).

[6] For a discussion of the stock-flow model see David M. Nowlan, "The Land Market: How It Works" in Public Property? The Habitat Debate Continued, The Fraser Institute, Vancouver, 1977

[7] Preston, et. al. (1989).

condominium starts were up from 4% in 1983 to 33% of starts in 1988.

- Socially assisted housing starts have been volatile, changing up or down by over 100% in some years.

- In 1987, the Thom Commission calculated that 40% of new rental starts in the 1980's were socially assisted.

It may be concluded that:

- In the short term there will continue to be a shortage of rental housing and low vacancy rates across the Province.

- Low vacancy rates suggest reduced mobility. This implies increased cost to moving.

- The young and students are more likely to be dependent on rental housing.

2.3 Affordability of Housing

Affordability measures used in the U.S. and Canada focus primarily on the ownership market. A review of affordability measures (included in Appendix 1) reveals that most assess the ability to purchase a home. The primary method of comparison in all cases is an assessment of shelter to income ratios. Because of the focus of this study the examination of affordability will concentrate on the rental market which is assumed to be the focus of policy intervention.

2.3.1 Affordability of Rental Units

The affordability of rental housing is most frequently measured by using rent to income ratios. At present, where more than 30% of gross income goes to rent an affordability problem is indicated.[8] According to the Institute for Social Research, rent to income ratios (RIR) are shaped by 3 separate influences:

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[8] The 30% guideline was introduced into the literature in the mid 1980's replacing the historical figure of 25%. See, for example, City of Toronto Planning and Development Department, "Approved Provincial Policy Statement: Land Use Planning for Housing", July 5, 1990.

- The relative price of rental housing
- Real income of households
- The choices of households

An examination of these produced several general and some specific postulates.

- Housing becomes less affordable if rents rise faster than the general price level.
- Housing becomes more affordable if real income rises.
- The distribution of income is more important than average real income in the analysis of housing affordability.

2.3.2 Affordability Relationships

A review of HIFE data by the Institute of Social Research has provided additional empirical guidance to the understanding of affordability impacts. Specifically:

- One person households have the greatest incidence of affordability problems. This is especially evident in households under 25 or over 65.
- 53% of households with affordability problems in Ontario were 1 person households.
- Average income increases with household size but average rents increase at a much slower rate.
- 90% of the lowest 10% of the renter income distribution and 67% of the lower 30% have affordability problems.
- About 27% of all Ontario renters have affordability problems and 21% are unable to help themselves out of the problem. The authors of the ISR study use the term "core affordability" for this group of 21% defined by shelter cost-to-income ratios.
- The most useful variables in the analysis of affordability are income and household composition.

2.3.3 Conclusions

- Housing affordability problems are primarily income-related.
- From a public policy perspective the working poor under 25, single parent households, and the elderly (those over 65 years of age) are most vulnerable, and most likely to suffer severe affordability problems.
- Given the pattern of employment growth in large cities, those workers with serious affordability problems are most likely to be under 25, female and employed in clerical and other low wage service occupations.
- The pervasive low vacancy rate will continue to reduce mobility and increase the costs of moving.
- The lower the mobility in the stock of rental units the greater the need for increased flow to address affordability problems.[9]

2.3.4 An Operational Definition of Affordability

According to Marion Steele, a housing problem:

> occur(s) when housing consumption is too low or, more precisely, when the amount of certain characteristics is so low, that safe, decent and sanitary life is not possible for the occupants[10].

The concept of housing affordability attempts to relate the amount that must be spent by a household to avoid a housing problem to the capacity of that household to pay. Thus the concept brings together a set of general

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[9]Canada Mortgage and Housing Corporation. Population , Households and Housing Requirements: Projections for Canada, the Provinces and Census Metropolitan Areas 1976-2001. (Ottawa: 1981) and Wilson, Michael, Minister of Finance. "A New Direction for Canada: An Agenda for Economic Renewal" (1984).

[10] M. Steele, Canadian Housing Allowances: An Economic Analysis, Ontario Economic Council, 1985.

conditions with a set of characteristics specific to the individual or household. Relative capacity varies with:

- Location
- Income
- Housing Needs
- Housing Market Conditions
- Housing Cost

Current affordability measures (Appendix 1) have focused mainly on the ownership market. Variations in approaches have measured affordability by:

- house type[11]
- household type
- shelter to income ratio

All measures attempt to define *who* has affordability problems. When the concept of affordability is tied to that of subsidy, concern expands to include *how great* is the problem and what resources are necessary to mitigate or alleviate it.

This study treats affordability as a public policy problem that may be partially resolved by the application of an exaction. The exaction is designed to capture the specific housing problems created by an increase in low wage employment attributable to new commercial development in the City.

The assumption is straightforward:

> Given the housing market conditions in the City of Toronto, increases in the number of households with specific income characteristics will increase the incidence of housing problems.

The challenge is to provide (a) an estimate of the number of households affected, (b) an estimate of the size of the exaction required to mitigate the

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[11] The Canadian Home Builders Association Affordability Index.

increase in housing problems, and (c) to determine the impact that various levels of exaction would have on the commercial development market.

What is necessary for safe, sound, and sanitary accommodation is a matter of judgement. However, given the information available on housing market conditions in Toronto, it is clear that at the very least, new households below the poverty line encounter housing problems. In our view, an exaction to fully address the needs of this group provides a solid lower bound for addressing affordability problems on a more general level.

This line of inquiry requires an operational definition of poverty. One well-known measure, the Canadian Council on Social Development poverty line, is calculated as one half the average family income. This figure is then applied to a family size of three and adjustments are made upward or downwards for households of varying sizes. CCSD therefore considers:

- Income
- Family Size

A second candidate measure is the Statistics Canada Low Income Cutoff (LICO). The LICO cutoffs are based on the amount the average Canadian family spends on food, clothing and shelter taken as a percentage of income. A 20% mark-up is then added to the average share. The figures are adjusted further to reflect the size of the community and family size and are adjusted every four years to reflect expenditure patterns. Families and individuals who spend more than this standard percentage on food, clothing, and shelter are below LICO.

LICO was chosen as the operational definition of poverty in this study for three reasons. First, LICO accounts explicitly for a wider range of factors that does the CCSD poverty line.

Second, a wide range of probabilities associated with household income incidence below LICO are available, including those essential to this study. *No other measure of poverty and no measure of affordability has anything remotely similar.*

Third, because LICO is so well-documented it may be used as a base upon which estimates of the costs of meeting affordability criteria for more broadly-defined groups may be made.

In summary, LICO takes into consideration:

- Cost of other goods and services
- Household Income
- Location
- Family Size
- Shelter Costs

LICO is therefore used in this study as the basis for estimating the number of households in *profound need* of housing assistance.

The Policy Statement on Land Use Planning for Housing (1989) outlines Ontario's goals of addressing the affordable housing needs of those below the 60th percentile of the regional household income distribution. This definition of the at-risk population provides this study with a measure of *full policy-defined* need, a target audience about four times larger than that identified by LICO.

Finally, a level of *mid-range* need comprising households with incomes below the 30th percentile of the regional income distribution was chosen to provide a midpoint of eligibility.

2.4 The Broader Policy Environment

The latter half of the 1980s has seen senior levels of government shift their approach to the function of governance with several implications for housing policy.

2.4.1 The Federal Level

As defined by Finance Minister Wilson in a series of consultation papers in 1985, it is necessary to confront the cost of programs - the budgetary constraint. Given the commitment to reducing the federal deficit as a necessary component of economic renewal it is clear that "any new initiative in housing can be taken only by redirecting funds allocated to existing expenditures, or by making existing programs more effective and less costly."[12]

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[12] Government of Canada, Consultation Paper on Housing, January 1985, p.4

The general philosophy of fiscal restraint based on assessment of cost versus benefits is accompanied by an undisguised goal of redistributing the cost elements. The paper poses the question:

> *should other levels of government be contributing a greater share of the cost involved in housing Canadians?*

This pattern of redistribution is clearly manifested in the reduction of the rate at which transfer payments from Federal to Provincial governments will be allowed to increase and in the capping of the Canada Assistance Program. The 1989 Federal budget, for example, cut $1.6 billion from the non-profit housing allocations.

The net impact of all the changes has been to reduce the rate of change in expenditures by senior (Federal & Provincial) governments and to shift the burden in a number of areas.

2.4.2 Ontario Housing Policy

In general, Ontario policy attempts to increase the accessibility and affordability of housing in the province by:

- regulating the rate of change of rents (Rent Regulation)
- protecting the existing stock of affordable rental units from conversion or demolition (RHPA)
- increasing the supply of non-profit housing (Homes Now)
- removing barriers to the production of affordable housing (Policy Statement on Land Use Planning for Housing, hereinafter the *Housing Policy Statement*)
- allowing municipalities to raise funds for public purposes by imposing charges on developers obtaining approval for plans of subdivision (Development Charges Act)

With the exception of rent regulation, the focus is on the supply side and most of the impacts occur in this sector. The impacts that are important in the City of Toronto include:

- a shift from the production of private sector rental housing to condominiums

- a substantial decline in the production of rental housing by the private sector

- an increased cost of moving and decreased mobility of renters

The Province has responded by financing 30,000 units of non-profit housing through Homes Now, setting aside nearly $1 billion annually for the support of public housing, and by issuing the Housing Policy Statement. The latter attempts to increase affordability by:

- reducing the length and complexity of the approval process

- requiring municipalities to create opportunities, through planning and zoning, for a minimum 25% of new housing to be developed in affordable forms

- encouraging municipalities to permit development of a broader range of housing types

2.4.3 The Position of Municipal Government

The ability of municipal government to perform its primary function of service allocation is limited by resource capacity and jurisdiction. Over the past thirty years, the relative importance of a range of licences and fees has increased. Most significant of these are a set of development related exactions. In the Greater Toronto Area these range from very modest sewer imposts in parts of Metro Toronto to $14,700 per single family lot in Vaughan.[13]

Own source revenues in most local governments total less than 50% of expenditure needs. The balance has been made up, traditionally, by a range of transfer payments in the form of conditional or unconditional grants.

As demands for services increase municipal governments are faced with a narrow range of difficult choices as they attempt to provide public benefit:

- Increase the highly visible and unpopular property tax

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[13] The Vaughan example represents the combined regional and municipal charge.

- Increase the range or size of development charges
- Reduce autonomy further by increased dependence on transfer payments
- Reduce services and the level of amenity the city provides

Against this backdrop, the City of Toronto appears unusually blessed by its large and rapidly-growing commercial assessment, fuelled by the region's booming economy and the position of the City as home to Canada's financial community. This extensive assessment base allows a much smaller dependence on grants and thus greater autonomy.[14]

That said, it may also be argued that the City's favoured financial position is offset by the need to provide service in a rapidly growing and expensive local economy.

2.5 Commercial Development and the Demand for Affordable Housing: A Synthesis

Given the conceptual and empirical information provided in Sections 1.1 to 1.4, it is appropriate, now, to respond to the question: Why is the development of commercial space expected to yield a demand for affordable housing?

The answer lies first in the nature of employment in the service sector in large metropolitan areas. This sector reflects a substantially polarized work force, a significant proportion of which is expected to be employed in low wage clerical, sales, and service jobs in which young women will predominate. An additional proportion of employment is expected to be part-time/temporary jobs. These also are heavily clerical and service in orientation and will generate wages even lower than the full-time clerical employment. Thus any expansion in employment will be primarily in the service sector (70-90%) and a significant proportion of this employment will be in low wage and part-time clerical jobs.

Second, given the response to housing policy, the private market will not provide a flow of units sufficient to address the needs of the lower-wage population. This problem is exacerbated by the incentives present in the system for reduced mobility. These are related both to the subsidies

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[14] In 1988, grant revenue was less than 4% of total revenue in the City of Toronto.

available under the existing rent review system and the high cost associated with moving.

Third, affordability is primarily an income problem. As shown earlier, the vast majority of low wage employees generated by the service sector are women (70%). The combination of their youth and gender discrimination makes this population generally vulnerable to income-related affordability problems. Further, any number of this group that are single or single household heads have a better than 90% probability of facing severe affordability problems, that is, problems that cannot be solved without external assistance.

Fourth, vacancy rates have declined in the Toronto CMA from about 3% in 1973 to 0.3 % in 1989. Low vacancy adds to the reduction of mobility and the costs of moving.

Fifth, the housing construction cycle is closely associated with the business cycle in Toronto. However, over the past decade the proportion of new multi-unit construction directed to rental has continued to decline. In 1988, only 11% of units were intended for rental and all of these were substantially beyond the means of the lowest 30% of the wage spectrum.[15] Thus any new development of office space that creates new employment will increase the gap between the demand for, and supply of rental units that fall within the affordability range of the low wage employees.

From a conceptual basis, therefore, there is no doubt that increased office development should produce increased need for affordable housing. The challenge, then, is to create a model that can separate that portion of increased need generated specifically by increased office construction.

2.6 Commercial Development and the Supply of Affordable Housing

It has also been argued that there is a linkage between commercial development and the stock of affordable housing[16]. In particular, growth of

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[15]A recent survey of Central Area households found that 57% of condominium units built since 1985 are in rental tenure. While this adds to the rental stock in the short run, these units do not tend to have modest rents. City of Toronto Planning and Development Department. CityPlan '91 Central Area in Transition. (Toronto, 1990).

[16] The Terms of Reference of this study, for example, ask the consultant to examine this relationship.

commercial space is believed by many to contribute to a *decline* in the number of affordable housing units. There are four mechanisms that might account for this relationship:

- preemption of space - affordable units might quite literally be "torn down" to make way for new commercial development

- crowding out - to the extent that commercial development contributes to increased costs of land, projects which provide affordable housing may prove less attractive because of lower rent rolls. Further, maintaining rental units in commercially zoned parts of the city may look increasingly unattractive under current market conditions.

- discrimination - in a tight market, landlords may discriminate against households of modest incomes in favour of those of greater means.

- gentrification - just as commercial development generates lower wage households so does it generate higher-wage households among the professional and managerial ranks. It is argued that these households contribute to the decline in the affordable housing stock by purchasing and restoring older housing stock and simultaneously eliminating rental units.

Unfortunately, the evidence in this area is unclear and the available data are inadequate to support formal analysis.[17] Conceptually, the case can be made that there are substantial ownership and rental housing opportunities at the upper end of the market:

- there is an over-supply of new condominium units in the Greater Toronto Area and in the City of Toronto; many more units are due to be completed in the next year.

- a sizeable fraction of all condominium units are rented. Data for the Central Area show 57% of post-1985 condominiums rented.[18]

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[17] To support analysis similar to that performed on the demand side in this study, a thirteen-year quarterly time series showing the supply of affordable units in the City would be needed. The definition of affordability would need to be reasonable and consistently applied throughout the series.

[18] City of Toronto Planning and Development Department, The Central Area in Transition, 1990

- the vacancy rate for the City has improved slightly from the low of 0.1%. However, most vacant units are in the $1000+ rental range.

- bonusing has provided a direct positive tie between allowable commercial floor space and new housing construction.

- other pro-housing policies - such as favourable consideration of mixed-use projects - have contributed to the supply of housing units.

Even more unclear is the evidence on the supply of affordable units. The data available for the City of Toronto suggest that between 1976 and 1985 about 1000 dwelling units were lost annually from the existing housing stock, the apparent net effect of conversions and deconversions. A 1989 study survey by the Institute for Social Research showed that the units lost rented at well below the average rents reported by CMHC and were, in all likelihood, affordable.

It is not unreasonable to conclude that the City has indeed been losing affordable housing units, *but it is impossible to conclude that this loss is related to commercial development.*

3. Linkage Fee Systems

The purpose of this section is:

- to identify alternative approaches which may be used to promote affordability
- to identify linkage fees that have been used in North American Cities
- to discuss who bears the burden of a linkage fee
- to identify choices in setting the structure of a linkage fee

3.1 Municipal Policy Tools to Address Housing Affordability

To address affordability objectives, municipalities may:

- increase general revenue to fund programs addressing affordability
- require property developers to contribute in cash or in kind or to conform with specific rules through exactions
- provide incentives to developers to address affordability

3.1.1 General Revenue Enhancement

Always available to municipalities is the power to increase the property tax rate. If used to provide affordable housing in the City of Toronto, however, this approach would place the burden of providing affordable housing on all property tax payers.

Another option is to seek to increase transfer payments from a senior level of government. While the fiscal climate is far from ideal to pursue this option, the Provincial Commercial Concentration Tax appears to provide at least an opportunity. Currently assessed on all commercial properties in the GTA in excess of 200,000 square feet, this tax raises about $115 million annually, $67.5 million of which originates in the City of Toronto.[19]

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[19] Michael S. Steinberg, "The Commercial Concentration Tax: The Essentials", Insight Educational Services, April 5, 1990

Revenue from the Commercial Concentration Tax is intended to finance enhanced infrastructure in the GTA. It has not, however, been specifically designated for that purpose.[20] Two possibilities for its use to provide affordable housing assistance come to mind. First, some portion of the tax raised in the City could conceivably be returned to the City to provide affordable housing. Second, a surcharge on City of Toronto properties with revenue earmarked for affordable housing could be contemplated.[21]

The advantage of the Commercial Concentration Tax as compared to a general property tax increase is that its burden would fall only upon commercial properties currently paying the tax. One important difference between these options is that the first can be applied at the sole discretion of the municipality while the second requires provincial cooperation.[22]

3.1.2 Exactions

An exaction is a requirement that a developer contribute public benefits in kind, in cash, or by conforming with specified rules as a condition of development approval.

Contributions exchanged for the provision of property-related services are known as *development charges* or lot levies in Canada. The application of development charges has a long history in North America.[23] Where

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[20] The tax is a source of general revenue for the Government of Ontario. Its proceeds are not placed in a special fund "earmarked" for infrastructure improvements in the GTA.

[21] The current tax rate is $1.00 per square foot per year. A twenty-five cent surcharge on City properties would raise approximately $17 million annually. This is about the same amount that a $6.00 linkage fee applied to all new commercial development would generate.

[22] The research in this study cannot be used to justify either of these two approaches as it focuses on the effect of *new* commercial development on the need for affordable housing.

[23] See Amborski, David P., "Impact Fees Canadian Style: Development Charges in Ontario", in Nelson, Arthur C. ed. Development Impact Fees, (Chicago: American Planning Association, 1988); and Smith, R.M. "From Subdivision Improvement Requirements to Community Benefit Assessments and Linkage Payments: A Brief History of Development Exactions", Law and Contemporary Problems, Volume 50, 1987.

development charges are used, the public benefit must be related to the needs of the approved development. In United States jurisdictions the *rational nexus* test is applied to ensure that the charge is legal.[24] In addition, the jurisdiction imposing the fee must have the requisite taxing authority. The use of exactions in Ontario has been recently clarified by the enactment of *The Development Charges Act* in December, 1989.

A *linkage fee* is an exaction in the form of a charge, or an in-kind provision of land or housing units, to provide affordable housing assistance. The fee may be levied on commercial development, all non-residential development, or all development. In most jurisdictions, it is necessary to establish empirically the linkage between the new development and the demand for affordable housing. Linkage has been most often analyzed and established for the commercial development sector.

Linkage is like a development charge in that a fee schedule is often established. However, it differs in one significant way. Development charges are used to finance services directly related to the property upon which the charge has been levied, usually in the form of infrastructure. In contrast, linkage fees provide, at best, an indirect benefit to the party paying the fee.

A third form of exaction is *inclusionary zoning* which has emerged in the United States over the past ten years. Inclusionary zoning requires that low or moderate income housing units be built as part of development in designated zones. This policy is both a response to a decline in the availability of federal subsidies for low and moderate income housing and a method of addressing equal housing opportunity.

Like the linkage fee, the objective of inclusionary zoning is to increase the supply of affordable housing. However, some differences exist in application. Inclusionary zoning tends to require the provision of the housing units on the development site, while linkage policies may allow the provision of the units on another site, or a cash payment towards the provision of the units by a public agency. Differences also exist in the legal bases of the two policies as inclusionary zoning is a land use regulation while linkage is a fee.

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[24] The *rational nexus* test requires that there be a reasonable relationship between the charge and the benefits received.

3.1.3 Incentives

Incentives to address affordable housing objectives take the form of density bonuses authorized under Section 36 of *The Planning Act* for housing and other public benefits, and under *The City of Toronto Act* for social housing only. Under this policy municipalities grant additional densities to developers in exchange for:

- the provision of some public benefit, or
- a cash payment to provide a public benefit

With incentive zoning, the range of public benefits may be broader than with exactions because the developer receives more than just permission to build within existing regulations. In most applications, the additional density granted generates income to provide both the public benefits and an economic return to the developer.

One benefit often pursued by municipalities in exchange for increased density is assisted or affordable housing. This is one of several objectives of density bonusing in the City of Toronto.

3.2 Current Linkage Fee Applications

The history and application of linkage fees in North America is relatively short. The first and best known example was established in San Francisco in 1980. There are currently no Canadian cities with linkage fees. In examining the U.S. experience, approaches can be divided into four categories:

- mandatory linkage fee policies
- incentive-based linkage fees
- negotiated (mandatory) linkage fees
- municipalities which are considering or have rejected linkage fees

Information on the municipalities in each category, the year the fee was enacted, the type of development to which the fee is applied, and the type of contribution for each jurisdiction is provided in Appendix 8.

3.2.1 Mandatory Linkage Programs

Mandatory linkage programs have required fees based on a set fee structure. The fees in the five jurisdictions listed range from $2.43 per square foot to $5.34 per square foot. Each jurisdiction in this group has based its fee on a study that established a link between new development and the demand for affordable housing.

San Francisco requires a fee of $5.34 per square foot or the provision of 38.6 units for every 100,000 square feet of development. The fee applies to any new or renovated office space larger than 50,000 square feet.

Boston charges a fee of $5.00 per square foot for any development over 100,000 square feet requiring zoning relief. The fee applies to that portion of the building in excess of 100,000 square feet. Due to the restrictive nature of Boston's zoning most new development requires some relief.

3.2.2 Incentive-based Linkage Programs

Incentive-based linkage is another name for incentive or bonus zoning. The focus of the exchange is affordable housing for increased density. This application is different from the mandatory linkage fee in that the developer has to pay the fee only if greater density is desired. Developers will participate only if expected benefits are greater that expected costs.

In Seattle and Miami, the maximum fee is higher than fees set under mandatory linkage programs. This higher fee reflects the fact that the developer receives increased density.

3.2.3 Negotiated (Mandatory) Linkage

Negotiated but mandatory linkage policies occur where municipalities collect a varying fee on certain types of development. Two of the jurisdictions in this category, Jersey City and Santa Monica, have charges per square foot that are used as guidelines in negotiations.

3.2.4 Municipalities Rejecting or Considering Linkage Fees

The final category comprises municipalities which considered, but did not approve, a linkage policy. Two of these, New York and Stamford, studied and actually rejected a policy proposal. Chicago has been considering linkage since 1984.

3.2.5 Summary of Existing Practice

- Most linkage fees were passed in the first half of the last decade
- They typically apply only to nonresidential development
- They are based on some type of a fee schedule or guideline
- The fee is based on some form of empirical analysis which establishes the relationship between new development and the demand for affordable housing

3.3 The Incidence of Linkage Fees[25]

With any type of fee or tax the individual writing the cheque rarely gets stuck with the entire bill. A developer facing a linkage fee can be expected to attempt to shift the burden forward to renters of the constructed space and backward to the previous landowner.

That portion of the fee that cannot be shifted will be borne by the developer in the form of

- rents that do not fully account for the fee, or
- reduced profits resulting from higher costs

When a linkage fee is imposed for the first time an immediate response will be to attempt to pass it on to renters. If the market is strong, i.e. has a relatively inelastic demand, a large percentage of the fee may be passed on

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[25]The analysis of the incidence of linkage fees is similar to that for development charges. For a detailed analysis regarding development charges see David P. Amborski, "The Incidence of Development Charges: Impact on the Housing Market", presented at The Canadian Institute's Bill 20 Development Charges Act seminar, December 1, 1989.

to renters in the form of increased rents. If the market is weak, relatively little may be passed on. In any case, it is unlikely that the entire burden of the fee could be passed on to renters as this would require the unlikely market conditions of either perfectly inelastic demand or perfectly elastic supply.

If a linkage fee is in place at the time of purchase of land and the developer has knowledge of the fee, this information will enter the calculation of an offer price for the land. The developer will attempt to shift some or all of the fee backward to the predevelopment land owner.

If the developer is not aware of the linkage fee, does not take it into account in his purchase decision, or if the fee is not imposed until after he has purchased the land, none of the incidence will be borne by the predevelopment landowner. Thus, to the extent the fee cannot be passed forward in the form of higher rents, it will be borne by the developer.

To summarize, the final impact of a linkage fee may be borne in part by the predevelopment landowner, the developer, and the final purchaser or renter of the project. The degree to which each bears the burden depends on:

- information and sophistication of the land purchasers
- the time at which the fee is imposed or changed
- prevailing market conditions for the developed use

3.4 Policy Formulation Decisions

Although the general objective of increasing the supply of affordable housing is obvious, any municipality contemplating the introduction of a linkage fee system should considered the following questions.

3.4.1 For which land uses can a linkage fee be empirically established?

This raises a question of how broadly the municipality should cast its net in undertaking research to justify the imposition of these fees. The experience with linkage fees in North American cities cited in Table 4.1 indicates that fees have been imposed in some jurisdictions for all nonresidential development, while others have restricted them to new commercial development. It is not clear from the literature, however, that fees for all types of nonresidential development have been empirically justified.

In the application currently being considered for the City of Toronto, all new commercial development as defined in the building permit system is being empirically tested for linkage. Data limitations in Toronto make it impossible to isolate "office space" or any other subset of commercial development. Data are available to examine institutional, and industrial linkage. However, the economic base and labour force characteristics of Toronto strongly point to the appropriateness of confining the analysis to the commercial sector.

3.4.2 For which land uses, and at what level, does the municipality wish to establish a fee?

This question is political and should be addressed in conjunction with the projected impacts of a linkage fee. Fees should be established only for those uses proven to be empirically defensible. The success of the first round of analysis and application of the fee will give guidance to whether the fee should be considered for extension to other uses. On a more basic level, the projected impacts of the fee will help to inform decision makers about:

- the appropriate level of the fee
- the percent of empirically proven linkage at which the fee should be set
- whether any fee should be charged

3.4.3 Should the level of the fee be determined in relation to the market impacts, the need for affordable housing, or both?

These questions relate to the detailed objectives of the linkage fee, as well as other planning objectives such as growth of the sector upon which the fee is imposed. Several jurisdictions which undertook empirical studies have not set their fees at the maximum identified. The reasons for this are not clear although they probably relate to potential market impacts, the likelihood of legal challenge to the fee, or uncertainty in the empirical relationship.

If there is concern about curtailing growth and the loss of property tax revenues in the sector where the fee is imposed, the impacts of the fee on the market will require consideration. On the other hand, if there is a specific planning objective to slow down growth in this sector, a high fee will be more appropriate.

Where the objective of the fee is to increase the supply of affordable housing to the greatest possible degree, it would appear to be appropriate to set the fee at the highest justifiable amount. However, even with this objective consideration must be given to the market impacts of the fee. It is possible that above a certain fee level, commercial development would be significantly curtailed.

3.4.4 Should the fee be a one time charge or paid over a number of years?

Some jurisdictions have opted to collect a smaller fee over a number of years rather than a larger fee at the time of development. The rationale is that it is more palatable to the developer to pay when the development is generating a cash flow. Both theory and contemporary practice, however, suggest that the market impact of a one time fee is identical to that of a finite series of payments with a present value equal to the one-time fee.

There are two caveats:

- To be defensible, the present value of the series of payments should not exceed the maximum one time fee that was empirically justified.
- To be distinguishable from a general business tax, the series of payments must be finite.

3.4.5 Should in-kind payments of value equal to the fee be accepted by the municipality ?

This question relates to whether or not the municipality wishes to be responsible for provision of all housing being generated from the fee. If the municipality has a good capability for housing delivery it may wish most or all fees to be provided in cash to its housing fund. However, in times of rapid growth the agency may not be able to deliver housing at an increased rate and housing may be brought on stream more rapidly with the assistance of "in kind" provision by the private sector.

3.4.6 What type of in-kind fees will be acceptable, units or land?

This question relates to what the municipality can make best use of in housing delivery. If in-kind units or land are to be acceptable, formulae or guidelines need to be established to ensure that their value is equivalent to that of a linkage fee.

3.4.7 Does the municipality have the authority to establish a linkage fee?

This is a legal question beyond the scope of this study. Clearly, a municipality would be well advised to proceed only when the answer to this question is an unequivocal yes.

4. Methods of Estimating Linkage

4.1 Methods Used in Other Studies

Methods used to estimate the demand for housing in general, and to model that demand in response to changes in demographic, economic, and fiscal conditions cover a wide range of approaches. During the 1960's, elaborate models were designed to simulate the housing markets of metropolitan areas. Severe problems of data availability and reliability, high costs of data gathering and data processing at that time, and other priorities all served to bring global urban modelling down to earth.[26] Nevertheless, projecting the need for housing, investigating the interaction of employment and land-use, and other partial investigations of the urban economy continue to be done for research and policy purposes.

Many recent housing analysis methods have been developed to assist in allocating "fair shares" of low-income housing to various municipalities.[27] Often the approach is an accounting of housing stocks, changes in population, and the costs of production, a simple but useful method for broad housing policy purposes.[28]

The goal of this project is more policy-directed, in that it focuses on the connection between commercial development, concomitant demands on the housing stock and the policy response to increased housing problems.

Previous studies in development-housing linkage have:

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[26]Lee, Douglas B. Jr. "Requiem for Large-Scale Models", Journal of the American Institute of Planners. Volume 39, May, 1973, pp. 163-178. Lee cites the San Francisco housing model developed in the 1960's which, once created, required 70,000 data values to be input before a forecast could be undertaken.

[27]William C. Baer. "The Evolution of Local and Regional Housing Studies". Journal of the American Planning Association, Volume 52, Spring, 1986, pp. 177-180.

[28]An example developed for less-developed countries is that reported in Struyk, Raymond J. "The Housing Needs Assessment Model" Journal of the American Planning Association, Volume 53, Spring, 1987, pp. 227-234.

- used methods that are based on two variables such as office occupancy and housing stock at a small number of points in time (San Francisco)

- used information on the commuting/migration situation of workers in new buildings measured across a sample of workers without control for other factors (Boston)

4.1.1 San Francisco

The approach used in San Francisco was based on a small number of points in time, from which a set of forecasts of office development, employment, population, and other key quantities was made.[29] The "model" used, while conventional and quite adequate for short to medium term planning forecasting, was not based on a statistically reliable method of estimating key ratios used in designing the mitigation fee levels. While some of the ratios used are normally quite stable (such as office worker density) and might not need to be estimated formally, others need to be more carefully estimated. For example, the multiplier effect on other employees of the added workers' demands for goods and services has always generated quite a range of estimates.[30] The San Francisco approach does not estimate the multiplier or the office-worker-housing linkage in a statistical manner.

On the positive side, an employee survey was available for deriving some key values, such as the number of workers per household, and worker migration patterns. Thus the San Francisco study was able to begin to estimate what portion of workers in new space were new to the City, and what portion lived in newly-created households.

When this information was combined with information on income distributions from the employee survey, building costs, and affordability guidelines from the U.S. Department of Housing and Urban Development,

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[29]Hausrath, Linda L. "Economic Basis for Linking Jobs and Housing in San Francisco" in Nelson, Arthur C. Development Impact Fees. (Chicago: American Planning Association, 1988) ed. p. 265, note 2.

[30] Goldberg, Michael and Peter Chinoy. Urban Land Economics. (New York: John Wiley and Sons, 1984) pp.50-70.

a linkage effect of $9.47-$10.47 per square foot was calculated.[31] This is the entire subsidy necessary to bring all new households into the affordable housing range.

4.1.2 Boston

The Boston study relied on a survey of employees in new office space to address the issue of migration directly. Workers were asked where they lived and whether they had moved to Boston for this job. From the sample of over 1200 employees, 268 were Boston residents, and of those, 85 answered that the job in the downtown building was the major reason that they had moved to Boston.[32]

The method hinges on the reliability and validity of the employee survey.

- The reliability is suspect because the sampling method was biased and could have been improved.

- The validity hinges on the interpretation respondents made of the question about the major reason they moved to Boston.

As the Boston authors note, this method fails to measure the multiplier effects of the new office employment, so increases in the workforce in the new office buildings are not reflected in increases elsewhere in the labour force.

To complete the linkage estimate based on the number of new employees, the authors estimated that a 1% increase in demand would cause a 1% price increase.[33] They then converted the two percent increase in demand caused by the new employee renters, to a two percent increase in rents to

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[31]Hausrath, Linda. "Economic Basis for Linking Jobs and Housing in San Francisco" Journal of the American Planning Association, Volume 54, Spring, 1988. p.215.

[32] Kayden, Jerold S., Karl Case, and Robert Pollard, The Linkage Between Office Development and Housing Costs in the City of Boston (Report Prepared for the Boston Redevelopment Authority, January, 1986).

[33] This is but one of many values that might have been used. George Fallis cites several reviews of price elasticity estimates ranging from 0.7 to 1.5. Housing Economics. (Toronto: Butterworth: 1985). p.34.

all residents. This is a clever way to estimate the price effects of additional demand in an unresponsive market.

A second estimate was built to gauge the cost to the public sector of providing the needed units through supply response. Assuming that all need would be met with new construction, this approach yielded a similar estimate of the linkage effect.

The effect of one square foot of additional office space was found to be between $11.00 and $12.00 by either method. Like San Francisco, the Boston study did not isolate the effect of development on lower income persons or vulnerable households.

4.2 Improved Method Developed in this Study

The methods described above, which constitute the existing approaches to measuring the impacts of office development on the need for affordable housing, have a number of serious deficiencies.

- they do not meet any reasonable test of measuring causal effects
- crucial ratios and multipliers are not reliably estimated

The Toronto Linkage Study goes a long way toward meeting these objections to linkage measurements because it develops a multivariate, time-series model of the growth of lower-wage workers in response to city commercial development. This method controls for the confounding effects of national and regional economic and demographic change, thus isolating the effects of commercial development.

Chapter 2 suggested that the pertinent indicators should include the following:

- the low income wage earner surrogate
- the change in construction of commercial space
- business cycle measures
- demographic and migration measures
- employment structure

- labour force participation rates of women
- rates of worker household formation

The more precise process of specification of the model required that these broad indicators be transformed into specific data series. This process was further constrained by the requirement that the data be accurate, consistent, applicable, and be available for a period long enough to sustain time-series analysis. The income, household formation, and housing data proved to be available only for selected points in time, and so this portion of the estimation was done without multivariate estimation.

The most innovative part of the method used in the Toronto Linkage Study is the use of multivariate time-series methods to replace bivariate and two-observation methods. The authors believe that the multivariate approach provides a firmer estimate of the part played by commercial development.

To summarize, the advantages of a multivariate time-series approach are:

- The estimate of linkage is based on more than fifty quarterly points, covering a variety of economic periods in the life of the city.
- The linkage estimate is made after controlling for the effects of confounding factors which are not of direct interest to the study, but which might make the linkage effect appear smaller or larger than it really is, when calculated by the simpler methods.
- The amount of reliability in the estimates can be derived from this method, and the precision of estimates made can be determined.
- While this method is used here to estimate the impacts on those needing affordable housing, it has the potential to be used to measure the impacts of other local decisions on the need for public services, and to forecast the need for those services in the future.

4.2.1 Important Links to Estimate

Estimating the link between commercial development in the City of Toronto and associated activities, on the one hand, and the requirements for affordable housing in the City, on the other, has proven to be challenging, but feasible.

The housing and urban economic theory reviewed above suggests that one of the most important links between commercial growth and a shortage of

affordable housing can be found in the nature of the employment generated in recent developments, the employment in other economic activities generated as a consequence of that employment (the multiplier effect), and the housing problem faced by these employees.

The major contribution of this study is to explore very carefully this link. The study traces the impacts of commercial development through the increased employment of local lower-wage workers, both in those enterprises and in downstream employment, to the need for housing assistance for some of those workers' households. This indirect method of estimating affordable housing need is based on a thorough look at the most important part of a complex process.

4.2.2 Turning Theory into a Testable Model

The linkage estimate was performed using time-series data on the growth in commercial development, the number of lower-wage employees, and the levels of several other demographic and economic variables:

- The greatest degree of disaggregation which could be relied on was used: quarterly data proved to be available for a large number of crucial series

- Variables used include the dollar value of commercial building completions in the City, labour force characteristics in the Census Metropolitan Area (CMA) and the Municipality of Metropolitan Toronto, and numerous regional, provincial, and national data series.

- Fourteen years of quarterly data created a large data set of 56 quarters for testing the underlying theory and for producing a final model.[34]

4.2.3 Indirect Versus Direct Estimates

Ideally, quarterly or annual data on the demand for, need for, or use of affordable units could be combined with data on commercial development and other variables. The resulting relationship would define linkage directly, while controlling for other extraneous effects.

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[34] A list of data sources appears in Appendix 2.

In practice, the lack of reliable data on affordable housing demand forced the investigators to rely on the commercial development-to-labour force linkage for the regression model, and to use estimates of the number of needy households generated by lower-wage workers to extend the model to housing requirements. To repeat:

- The completed model is an *indirect* estimate because no waiting list or needy household data were available for the regression analysis.
- The researchers investigated *direct* estimates based on social housing waiting lists, but they were statistically unreliable due to the accumulation of inactive cases on the lists.

4.3 Summary of the Method Used

Canada does not track individuals in a manner which would allow for the detailed study of patterns of employment, migration, income, and residential choice. Researchers who want to identify the development and persistence of the linkage over time are forced to make some compromises in data selection, data adjustment, and model-building. In this study the compromises made still left intact the characteristics of the model described below:

4.3.1 The Model

The model specified:

- is based on part of the commercial development-to-labour-force-to-needy household chain
- is a quarterly time-series model based on 1976-1989
- controls for national and regional economic fortunes: business cycles, interest rates, and secular changes in the rate of female labour force participation
- meets the requirements of multivariate regression analysis
- accounts for almost all of the variation in the lower-wage workforce during the study period

- shows a sizeable link between office development and that workforce, after controlling for the other effects

- indicates that the estimate of the commercial space-to-worker linkage is not sensitive to the particular choices of control variables: the linkage coefficient appears to be very reliably measured

5. Linkage Estimates

5.1 Introduction

This chapter begins with an analysis of linkage from the standpoint of *profound need* for affordable housing. By profound need we mean housing need experienced by households:

- whose livelihood is directly or indirectly related to new commercial development in the City
- whose household incomes fall below Statistics Canada's Low Income Cut-off (LICO), and therefore
- who *will require* assistance to live in the City of Toronto

By any standard, households with these characteristics have affordability problems; in fact their affordability problems extend far beyond shelter. The analysis is extended to include households with incomes above LICO in section 5.5, below.

Estimation of the link between commercial space growth and the demand for affordable housing was done in three steps:

1. Using multivariate regression analysis, the number of employed persons in clerical, sales, and service occupations associated with the production of new commercial development in the City of Toronto was estimated. The estimate includes the multiplier effect.

2. Using the most recent information on household formation, household income, and the proportion of workers residing in the City, the number of single-person and family households living in the City with incomes below LICO formed from the ranks of newly employed was calculated.

3. Using recent estimates of the costs of building and operating housing units in the City, the final linkage for profound need was calculated.

5.2 The Effect of Commercial Development in the City of Toronto on Lower-Wage Employment in the Toronto CMA

For the purpose of this study, lower-wage job holders are those individuals classified into the following major occupation groups:

- clerical and related occupations
- sales occupations
- service occupations

The essential linkage hypothesis is that the number of persons holding such jobs depends on the quantity of commercial space available. Theory and logic suggest that the level of employment in lower-wage occupations also depends on other variables. These include national and regional economic circumstances and demographic factors.

While constrained somewhat by the data series and measures available, the following model was built from a time series database containing quarterly data from 1976 to 1989. Its purpose is to quantify the linkage relationship while controlling for as many other factors as possible.[35]

EMPLOYEES =		28.9 x COMMERCIAL
	+	1980 x PRIME
	+	8778 x FEMLFPART
	-	5903 x UNEMPLOYMENT
	+	156545

The variables are defined as follows:

EMPLOYEES	The predicted number persons employed in clerical, sales, and service jobs who live in the Toronto Census Metropolitan Area
COMMERCIAL	The amount of money spent on completed new commercial buildings in the City of Toronto, measured in millions of 1981 dollars[36]

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[35] A full technical description is given in Appendix 5. All parameter estimates are significantly different from zero at the .01 level or better. Regression R^2 is .94 .

[36] Note that this is a measure of the *constant dollar value* as opposed to the *area or floor space* of new commercial development conventionally used in the linkage literature. It can easily be shown that the two are directly proportional to one another - and hence interchangeable - with the *cost per square foot* in the base year as the conversion factor. Because the original series from the City of Toronto's Building Permit System tracks

PRIME	The commercial prime interest rate
FEMLFPART	The female labour force participation rate in the Toronto CMA
UNEMPLOYMENT	The unemployment rate in the Toronto CMA

For the purpose of quantifying linkage, the model says the following:

> **Controlling for the effects of the business cycle (PRIME), the local economy (UNEMPLOYMENT), and secular trends in the labour market (FEMLFPART), an investment of one million 1981 dollars in new commercial space in the City of Toronto generates 28.9 clerical, sales, and service employees in the Toronto Census Metropolitan Area.**

This number includes not only those directly employed in new commercial space but also the additional lower-wage employees required to support their economic activity. We refer to all these people as *linkage-related employees* and to the households they form as *linkage-related households*.

Over the past fifteen years, approximately 2.7 million square feet of commercial space have been completed annually in the City of Toronto at a cost of $142 million (1981 dollars).[37] *Commercial development in the City of Toronto has therefore been associated with slightly more than 4,100 new clerical, sales, and service employees annually in the Toronto CMA.*

---

values reliably, we use the "value" series in the regression model. Conversion to the more familiar "floor space" measure is performed in the spreadsheet model of Appendix 6.

[37] This is comparable to David Nowlan's long run average absorbtion rate for new office space in the Central Area of some 1,665,000 square feet. Our figure is about 70% higher because (a) we use the entire city and not just the Central Area and (b) our count includes development for commercial uses other than office buildings. See Nowlan, D. and G. Stewart. "The Effects of Downtown Population Growth on Commuting Trips: Some Recent Toronto Experience" (submitted for publication, December, 1989)

5.3 From Lower-Wage Employees in the CMA to Housing Units in The City

Assuming a "typical" year in terms of commercial completions in the City, the process of determining linkage-generated *profound need* for affordable housing begins with the 4100 new employees in the CMA and leads to a need for about one hundred twenty-seven new units of assisted housing for individuals and families below LICO in the City of Toronto. Slightly more than half of these units are required for single-person households.

The process is shown in Figure 1 and is detailed in spreadsheet form in Appendix 6. The logic unfolds as follows:

1. Of the 4100 new employees in the CMA, 32% or 1300 will live in the City. This is based on an occupation-specific probability of city residence among downtown employees measured in the 1989 Downtown Employee Survey.

2. Assuming that the 1300 employees comprise a representative sample of clerical, sales, and service workers, they may be divided into these specific occupational groups according to percentages for the City employed labour force obtained from the 1986 Census. This yields about:

   - 585 clerical workers
   - 290 sales workers
   - 425 service workers

3. By applying occupation-specific probabilities of being "unattached" from the 1986 census[38] these groups may be categorized as unattached individuals or as members of economic families.

4. The numbers of economic family households and single-person households are then found by applying household headship rates.[39] This yields *860 new households in the City*, distributed as follows:

   Clerical-headed families: 294

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[38] These probabilities are available only for the Province of Ontario. We assume that workers in the city follow the same pattern.

[39] The economic family data were estimated from the Provincial Low Income Cut-off, Census, 1986, table. The unattached individuals rate was estimated from data on all such units in the City of Toronto, Census, 1986.

Clerical-singles:	91
Sales-headed families:	138
Sales-singles:	54
Service-headed families:	203
Service singles	80

5. Finally, household head occupation and family status-specific probabilities of income below Statistics Canada's LICO[40] are applied and families and single person households summed. This yields one hundred twenty-seven households in profound need of housing assistance:

   - 57 City families below the low income cut-off
   - 70 City single-person households below the low income cut-off

To reiterate, this represents the *profound need* level of housing provision required in an average year as a result of commercial building completion.

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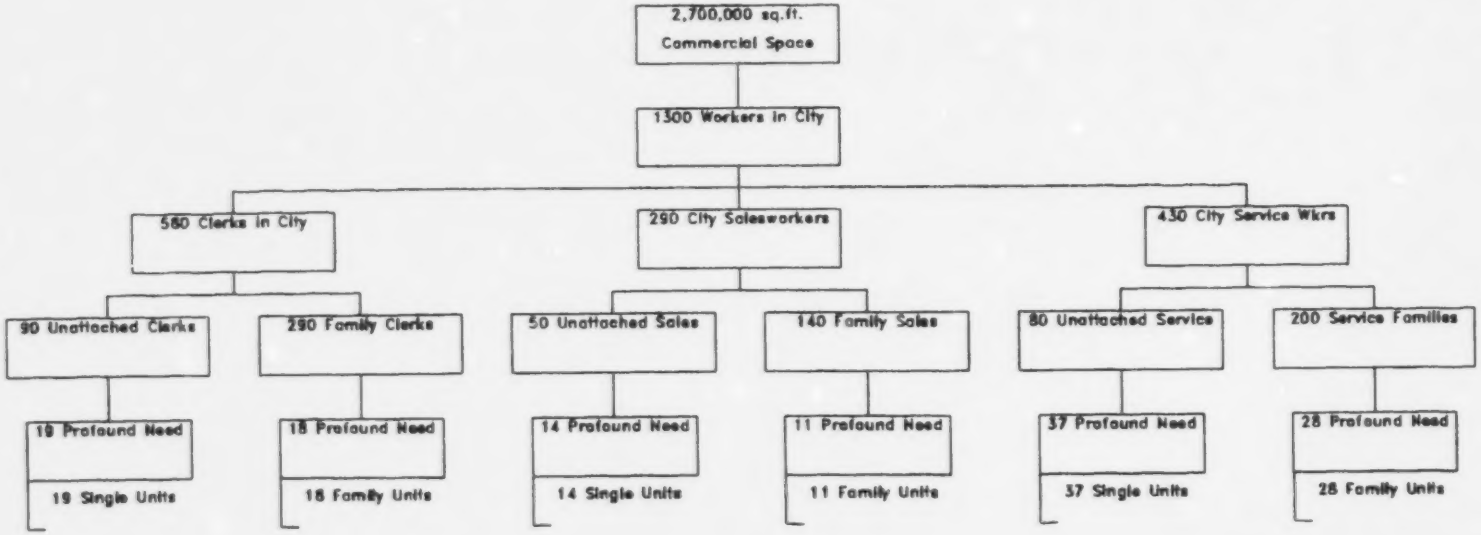
[40] These are Provincial rates from the 1986 Census.

Figure 1

Linkage–Related Housing Needs
City of Toronto



5.4 Costs of Meeting Profound Need and a Linkage Calculation

Current (1990) unit costs for family and single construction of high rise accommodation in Downtown Toronto are as follows[41]:

	FAMILY UNIT	SINGLE UNIT
Land	50,000	50,000
Construction	96,000	64,000
Parking	12,500	8,333
Landscaping	1,000	1,000
Total	$159,500	$123,333

Assuming a real annual cost of borrowing of 5%, twenty-five year amortization, and net income of $50 and $25 per month[42], respectively, the present value of subsidy costs per housing unit are:

- $150,947 for family units
- $119,056 for single units

This level of subsidy implies a linkage effect in 1990 dollars of:

- *$6.16 per square foot of new commercial space completed in the City of Toronto*

In other words, a City of Toronto linkage fee to address the needs of linkage-related households below the low income cut-off *is empirically justified. Addressing the affordability requirements of households with incomes above the Statistics Canada LICO requires a higher fee.*

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[41] City Planning and Development Department Staff estimates, 1990. Along with this report, City Staff have been provided a working spreadsheet model to test alternative cost assumptions.

[42] This represents monthly rents of $200 and $150, typical RGI rental levels for very low income family and single households. From this, monthly operating costs, not including debt service, of $150 and $125 for family and single units, respectively, have been subtracted.

5.5 Beyond Profound Need

A linkage fee of $6.16 per square foot would provide for the housing needs of the lowest income city households associated with commercial development. *However, it would be insufficient to contribute towards the housing affordability gap experienced by linkage-related City households with incomes above the Statistics Canada LICO but below other, more encompassing guidelines.*

To address both profound need and the affordability problems of other linkage-related households, the linkage fee would need to be larger. Just how much larger is the analytical outcome of a three-part policy question. The answer depends on (a) the definition of affordability, (b) the reach of the affordability criteria into the upper portions of the household income distribution, and (c) the extent to which other issues - such as market response - limit the size of the fee.

In practice, the LICO criterion - and the $6.16 fee - addresses the affordability problems of households with incomes below approximately the 15th percentile of the regional household income distribution. By contrast, the definition of affordability in the Housing Policy Statement extends to the 60th percentile of the regional household income distribution, giving a potential target audience four times greater.

The Housing Policy Statement definition does not, however, imply a linkage fee of four times the LICO-based level. Indeed, as relatively better-off households are successively added to the profound need base, the per-household subsidy required to achieve affordability would decline, reaching zero at the 60th percentile of the regional income distribution.[43]

A precise estimate of the linkage fee corresponding to the Provincial Housing Policy Statement's definition of affordability would require data on regional household incomes by occupation of the household head, further broken down by household size. This is not available in published form.[44]

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[43] Some households with incomes above the 60th percentile might pay more than 30% of income on housing. They would not be considered as having affordability problems under current policy.

[44] It could be obtained as a special tabulation from Statistics Canada.

Nonetheless, occupation-specific income distributions are available for individuals. Thus it is possible to form a conservative estimate of linkage according to the Provincial definition by assuming that the incomes of households headed by a clerical, sales, or service worker follow a distribution similar to that of individuals in the same occupation. An examination of the data reveals that:

- 15% of clerical, sales, and service-headed households in the City have incomes below LICO and are therefore in profound need
- a further 20% of such households have incomes above LICO but below the 30th percentile of the Toronto CMA income distribution for all households, and
- a further 45% have incomes above the 30th percentile but below the 60th percentile of the Toronto CMA income distribution for all households

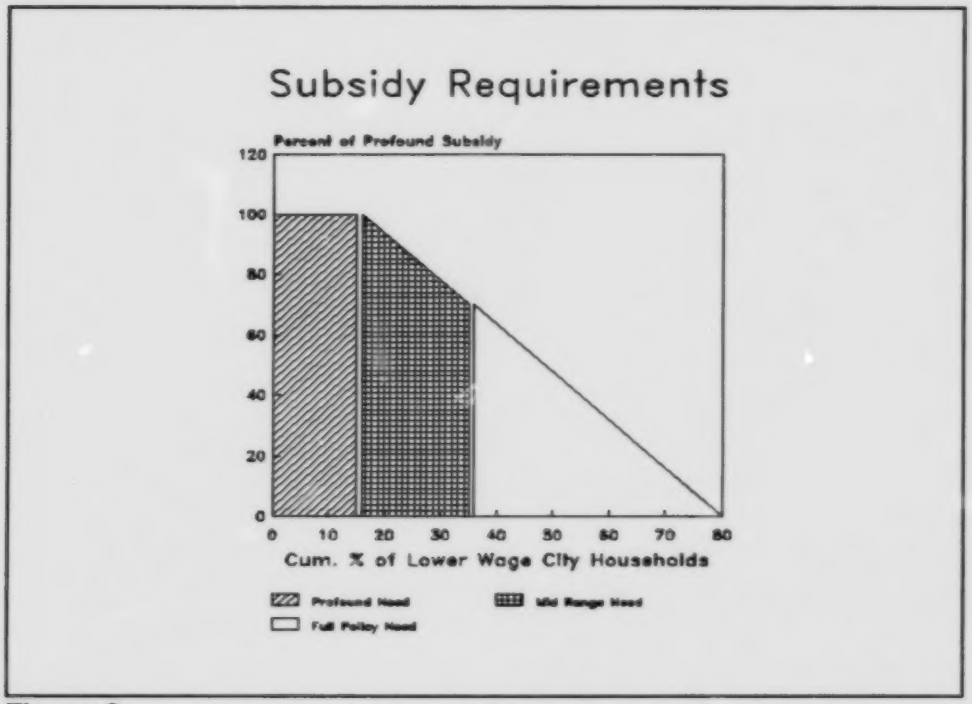

Figure 2

The affordability subsidy is shown as a function of relative income in Figure 2.[45] The area under the curve is proportional to the total subsidy required. Three shaded areas are shown. The leftmost rectangle is the subsidy required to meet the needs of linkage related-households below LICO. The middle section represents the subsidy required to assist linkage-related households with incomes above LICO but below the 30th percentile of the CMA income distribution. The final triangle shows the subsidy required to assist households between the 30th and 60th percentile.

Simple geometry shows that the middle section and the right-most triangle are approximately equal in area and that each has an area of 1.1 times the *profound need* rectangle.

Since a linkage estimate of $6.16 per square foot has been calculated for the profound need group, Figure 2 implies:

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[45] The downward sloping segment of the curve is shown as a straight line. In all likelihood the true line is a curve above and to the right of this segment.

- a fee of $12.94 per square foot ($6.16 + 1.1 x $6.16) to provide for the affordability needs of linkage-related households below the 30th percentile including those below LICO, and

- a fee of $19.71 per square foot ($12.94 + 1.1 x $6.16) to assist *all* linkage-related households below the 60th percentile.

Figure 3 shows the justified 100% linkage fee as a function of the percentile of the regional income distribution considered in the affordability definition.

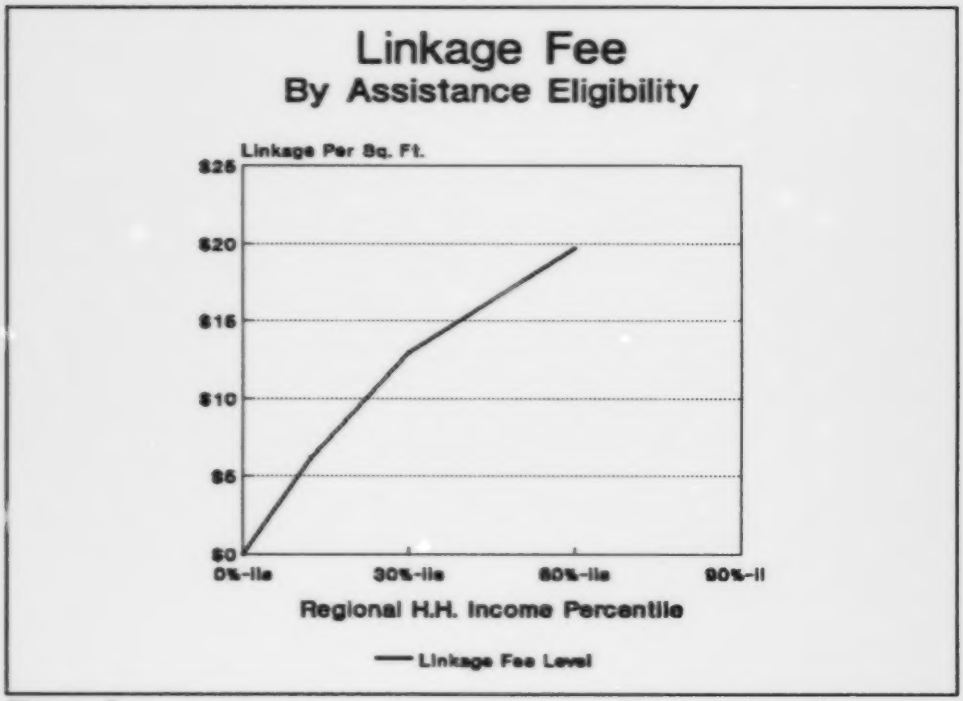

Figure 3

6. Projections to 2001

6.1 Nine Scenarios

The incremental need for affordable housing construction in the City of Toronto resulting from commercial development depends on two key policy-sensitive parameters:[46]

- the rate of growth of commercial development, and
- the degree of affordability need to be addressed

The Department of Planning and Development has recently prepared projections to 2011 based on parameters similar to these.[47] The nine scenarios below are derived from three rates of growth of commercial space and three cumulative levels of need:

- profound need - all linkage-related households below LICO
- mid-range need - all linkage-related households below the 30th percentile of the regional household income distribution, including those below LICO
- full policy-defined need - all linkage-related households below the 60th percentile of the regional household income distribution

The "medium" rate of commercial space growth, 2.74 million square feet per year, is the long run average gross annual addition to the City's commercial space inventory derived from building permit data used in this study. It is bracketed by "low" and "high" rates of 1.83 million and 3.65 million square feet per year. These correspond directly to the low, medium, and high rates

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[46] The estimate also depends on the proportion of City workers choosing to live in the City and several other non-policy sensitive demographic and economic parameters documented in Appendix 6. For this set of scenarios, the proportion is set at .32, a figure representing the proportion of City-resident clerical workers in new downtown office buildings found in the November, 1989 Downtown Office Survey. This compares with .37, the 1986 Census Journey To Work rate for all city workers.

[47] The "pipeline study" established low, medium and high rates of growth of office space in the Central Area and housing completions in the City. The result is a three by three matrix identifying nine scenarios.

of "annual office absorption in the central area" used in recent City projections.[48]

The results are summarized in Figure 4. The annual incremental need for affordable housing ranges from 85 units (low growth, profound need) to 675 units (high growth, full policy-defined need).

[48] The rates are shown here in Imperial units. The spreadsheet model in Appendix 6 uses metric units to drive the scenarios.

Figure 4

FIGURE 4: ANNUAL LINKAGE RESULTS FOR NINE SCENARIOS

			DEGREE OF NEED		
			PROFOUND *< LICO*	*MID-RANGE* *< 30%-ile*	*FULL POLICY* *< 60%-ile*
ANNUAL INCREASE IN COMMERCIAL SPACE (SQ. FEET)	LOW 1,829,200	*LINKAGE-RELATED CITY WORKERS*	865	865	865
		LINKAGE-RELATED CITY HOUSEHOLDS	572	572	572
		HOUSEHOLDS IN NEED	85	200	457
		LINKAGE FEE ($/SQ.FT.)	$6.16	$12.94	$19.71
	MEDIUM 2,743,800	*LINKAGE-RELATED CITY WORKERS*	1298	1298	1298
		LINKAGE-RELATED CITY HOUSEHOLDS	857	857	857
		HOUSEHOLDS IN NEED	127	300	686
		LINKAGE FEE ($/SQ.FT.)	$6.16	$12.94	$19.71
	HIGH 3,658,400	*LINKAGE-RELATED CITY WORKERS*	1737	1737	1737
		LINKAGE-RELATED CITY HOUSEHOLDS	1143	1143	1143
		HOUSEHOLDS IN NEED	169	400	915
		LINKAGE FEE ($/SQ.FT.)	$6.16	$12.94	$19.71

6.2 Proceeds of a Linkage Fee to 2001

The proceeds of a linkage fee system depend on the level of the fee, the rate of commercial development, and the length of time required to phase it in. Assuming that projects for which building permits have been issued will not be retroactively subject to a linkage fee, about three years will pass before any revenue is realized.[49]

If a linkage fee were to come into effect on January 1, 1992, the results shown in Figure 5 may be expected. After a three year phase-in period, a fee based on 100% measured linkage would generate between $11.27 million (profound need, low growth) and $72.12 million (full policy-defined need, high growth) per year. Cumulative proceeds over the first ten years of a linkage fee program would be between $78.89 million and $504.86 million.

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[49] As of October, 1989 there were approximately 25.8 million square feet of office space in the central area "pipeline" of which 30% was permitted. This corresponds to approximately 32.3 million square feet of commercial space of all types in the City as a whole. We assume that the same proportion have building permits as in the Central Area. If all projects in the "pipeline" were deemed exempt from a linkage fee - and not just those with permits - funds would not begin to flow until the early years of the next century.

Figure 5

FIGURE 5: PROCEEDS OF A FEE BASED ON 100% MEASURED LINKAGE

			DEGREE OF NEED		
			PROFOUND *< LICO*	*MID-RANGE* *< 30%-ile*	*FULL POLICY* *< 60%-ile*
ANNUAL INCREASE IN COMMERCIAL SPACE (SQ. FEET)	LOW 1.83 MILLION	*LINKAGE FEE ($/SQ.FT.)*	$6.16	$12.94	$19.71
		PROCEEDS FIRST 3 YEARS	0	0	0
		ANNUAL PROCEEDS THEREAFTER ($MIL)	$11.27	$23.67	$36.06
		PROCEEDS AFTER 10 YEARS ($MIL)	$78.89	$165.66	$252.43
	MEDIUM 2.74 MILLION	*LINKAGE FEE ($/SQ.FT.)*	$6.16	$12.94	$19.71
		PROCEEDS FIRST 3 YEARS	0	0	0
		ANNUAL PROCEEDS THEREAFTER ($MIL)	$16.90	$35.50	$54.09
		PROCEEDS AFTER 10 YEARS ($MIL)	$118.33	$248.49	$378.65
	HIGH 3.65 MILLION	*LINKAGE FEE ($/SQ.FT.)*	$6.16	$12.94	$19.71
		PROCEEDS FIRST 3 YEARS	0	0	0
		ANNUAL PROCEEDS THEREAFTER ($MIL)	$22.54	$47.33	$72.12
		PROCEEDS AFTER 10 YEARS ($MIL)	$157.77	$331.32	$504.86

7. Impact Analysis

The potential impacts of a linkage fee depend on the structure of the market and the prevailing conditions in the sector on which the fee will be imposed. Therefore the first part of this chapter will describe the structure of the commercial market, the prevailing conditions and expectations about growth. The second section will describe the existing fiscal policy environment, current charges and taxes, and anticipated changes. In the final section, impacts of the fee are assessed.

7.1 The Existing Toronto Commercial Market[50]

Three aspects of the commercial market need to be addressed: the structure of the market, market conditions in the submarkets, and projections for the City of Toronto market.

The commercial office space market in Metro Toronto comprises a number of submarkets which, to some degree, are substitutes for one another. Real estate firms which analyze the Metro market identify a downtown market, a midtown market, and a number of suburban markets (north, east and west). The degree to which one market is substitutable for another depends upon the nature of the firms in the market and their demand for space.

More important is how the markets have been performing in terms of growth, absorptions, and vacancy rates relative to competing submarkets in the GTA and how this performance is expected to change in the future.[51]

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[50] Although the proposed linkage fee is to be applied to both office and retail commercial uses, the discussion of the existing commercial market will focus on the commercial office sector. The reason for this focus is (a) that the data on the performance of this sector are much better since they are tracked and analyzed by several major real estate firms; and (b) because retail development is often built in conjunction with office development as a use on the ground floor or below grade. Therefore outside of major retail facilities the two types of uses move through cycles in a similar fashion.

[51] According to Colliers 1989 Canadian Office Survey, Toronto's office occupancy costs at $56/square foot rank 9th in the world just $2 behind the occupancy costs for New York City. This figure includes base rent and operating expenses for a firm occupying 10,000 square feet in a prime downtown location with a five year lease beginning in November 1989.

For an analysis of City of Toronto policies, the markets are divided into two segments: the City of Toronto and the rest of the GTA.[52]

The amount of commercial space demanded at a given location depends on:

- the price of that space
- distance from the centre of the city
- amount of floor space occupied in this area in the previous year
- the supply of space in all substitute areas
- neighbourhood characteristics

The supply of commercial office space in a given location is a function of:

- the rental price of floor space in the area
- the price of land
- zoning restrictions on the specific land parcel/site
- the existing stock of commercial office space
- the total land zoned for commercial uses

The vacancy rate in the downtown market is expected by most analysts to rise significantly in the short run. Experts predict that the rate could move sharply up from the 7% range which existed in 1989 to 15%-18% by 1992.[53]

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[52] This type of analysis was undertaken in 1975 when the City imposed a 45 foot maximum height Holding By-law. See D.N. Dewees, "The Economic Effects of Changes in Land Use Control in the Central City", Report to the City of Toronto Planning Board, July 1975.

[53]As absorption rates are relatively low, 306,844 sq. ft., in 1989, Colliers expects the vacancy rate to move sharply up from 7.0% in 1989. Royal LePage predicted that vacancy rates could increase to 15-18% by 1992; and J.J. Barnicke predicts rates will reach 12% before coming back down in the mid 1990's.

7.2 The Fiscal Policy Environment

The fiscal environment is affected by the taxes, charges, and policies which are included in the feasibility decisions of developers and affect the level of commercial economic activity in the City. Under this heading it is also necessary to consider any changes that are on the policy agenda.

7.2.1 Property Tax

The most basic tax on commercial property is the property tax and associated business tax. A recent analysis of property tax revenues in the City of Toronto was based on the following assessment assumptions which are used below to estimate revenue loss from reduced commercial growth:[54]

Realty Assessment

Office	$17.65/sq.ft.
Retail	$40.00/sq.ft.
Parking	$1175/stall

Business Assessment

Office/Retail	50% of Realty(@ 95% occupancy)
Parking	30% of Realty

The Province has approved a reform in Metropolitan Toronto which will require a reassessment of all property. Although reassessment will not be phased in for several years, it is significant in that it will eventually increase the overall commercial property tax burden in the City of Toronto.[55]

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[54]These assumptions were used by Hemson Consulting Ltd. in A Review of the Bay-Adelaide Centre, May 1989.

[55]This is clearly the outcome based on the analysis presented in Report of the Task Force on Reassessment in Metropolitan Toronto, September 6, 1989.

7.2.2 Development Charges

The intent of a development charge is to defray the municipal cost of providing infrastructure or a service in the development process. Consequently, existing fees such as the City's current Sewage Impost Fee of $.50 per square foot are tied specifically to changes in the cost of providing service and are not necessary to consider.

However, because of the new *Development Charges Act*, municipalities are reviewing the use, application, and magnitude of a broad range of development charges. Changes that result in new or higher charges are important to consider and the larger the change the greater the potential impact.

Both the City of Toronto and Metropolitan Toronto have placed the issue of development charges on the policy agenda. Should either or both impose a charge, in the short run the developers will attempt to shift the burden forward to renters of commercial space in the same manner described in Section 3.3. This will put upward pressure on rents and downward pressure on the rate of commercial growth.

7.2.3 Commercial Concentration Tax

The Commercial Concentration Tax, which came into effect at the beginning of 1990, is an annual tax of $1.00 per foot levied upon all commercial property in the GTA greater than 200,000 square feet. Although the Province hoped to have the burden of the tax fall upon the owners of commercial buildings, the impact in the short run is on renters of commercial space. The reason is that commercial leases are typically structured so that costs like this tax are passed through to the renter. Consequently, the immediate impact of the tax has been to raise occupancy costs by $1.00/sq. ft. annually. As a response, the demand for space should decrease, with renters either using less space, or choosing space outside the GTA where this is an alternative.

7.2.4 Linkage Fees

No municipality in Ontario, other than the City of Toronto, currently has or is studying the imposition of a linkage fee. This is important in that the initial impact of a linkage fee will cause development in the City of Toronto to be more expensive than substitutes in the rest of the GTA or elsewhere.

7.3 Impacts

The impacts of a linkage fee depend on the size and design of the fee and how the economic actors respond once the fee is imposed.[56] *Whether the fee is applied as a one-time charge, a stream of annual payments, or an equivalent in-kind contribution, the cost to the developer is essentially similar.*

A recent pro-forma analysis for a high-rise office building in the downtown core suggests that:

- a $6.16 per square foot linkage fee would represent approximately 1.3% of total project costs, including land
- a $19.71 fee would amount to just under 5% of total project costs

7.3.1 Impact on Growth of Commercial Space in Toronto

The imposition of a linkage fee increases costs; in economic terms it shifts the supply curve upward. The price (rent) response depends on the elasticity of demand, i.e. the relative responsiveness of rents to changes in demand. This elasticity will vary depending upon all of the factors which underlie the demand curve.

The short run impact is clear. Since the fee can only be borne by the developer or renter there will be a reduction in the rate of growth of occupied space in the City. This will arise because renters will seek space in substitute markets or they will choose to consume less space per worker. This will add to the vacancy rate in the City and shift the burden of the fee partly to the developer.[57]

Generally, the larger the fee, the greater the impact. However, the timing of the fee is also important. To minimize the impact on the growth of the commercial sector, the fee should be first imposed when the economy is strong and the vacancy rate is relatively low in the City.

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[56] It is assumed that a fee is in the range of $6.16 - $19.71/sq. ft. as discussed in Chapter 5 is levied on all new commercial space.

[57] This type of effect has been demonstrated for the Philadelphia market by Huffman, F.E. Jr. and Marc T. Smith in "Market Effects of Office Linkage Fees", Journal of the American Planning Association, Volume 54, Spring 1988.

In the long run there will be some tendency for the fee to be capitalized into predevelopment land prices. Because this occurs when land transacts in the market, after the fee has been established the impacts on rents and the rate of growth of the sector will be small. That portion not capitalized into predevelopment land prices will discourage commercial growth.

7.3.2 Fiscal Impact of Reduced Commercial Growth

With a reduction in the growth of the commercial sector there will be a corresponding loss of assessment and tax dollars. This may be significant in that commercial property generates a surplus of tax revenue relative to the costs it imposes on the municipal government.

However, if we use the City's midpoint growth projection and assume that the introduction of a fee will reduce growth by 10% (a very high estimate)[58], the revenue from the linkage fee would be greater than the loss of other revenue. See Appendix 7.

7.3.3 Impact on Bonus Zoning

Linkage fees may interact with bonus zoning. A premise of bonus zoning is that the additional development will generate sufficient additional profits to pay for public benefits like housing. If developers pay linkage fees on both "as of right" and bonused density, it will tend to reduce their profits and their willingness to participate in density bonuses.

If the two policies are to be complementary, the method by which the City estimates the public benefit derived from bonusing should continue to be based on a "Benefits" formula approach.[59] The formula should be estimated on average values and costs without linkage fees since these fees may be shifted to predevelopment landowners.

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[58] Since a fee of $6.16 - $19.71 /sq.ft. will increase total project costs by less than 5%, a decrease of commercial development by 10% is most unlikely.

[59] The pros and cons of the "benefits formula" and the "financial formula" approaches were considered in a report to The Planning Advisory Committee regarding Section 36 Guidelines, dated July 6,1989.

7.4 Conclusions

The introduction of a linkage fee on commercial development would have both short and long run impacts in the City of Toronto. If the linkage fee were confined to the lower third of the range identified here - $10 per square foot or less - its impact would be measurable but modest, particularly in the long run when the fee could be passed on to predevelopment landowners as well as to downstream commercial tenants.

The impact of any increase in cost depends on market conditions. These, in turn, determine the price adjustments that are possible in the market area. In our judgement, a fee above $10.00 would represent a significant disincentive to commercial growth in the City.

As well, it would provide a target for opposition, particularly during an economic downturn, for the following reasons:

- no other jurisdiction charges a fee of this magnitude
- no other jurisdiction charges the full value of measured linkage

At any level of the fee, a reduction in the growth of commercial development could be anticipated in the short run, particularly in light of current market conditions. The tradeoff between collecting the linkage fee and losing property tax and grant revenues would result in a net revenue gain to the City under any reasonable assumption. However, because the linkage revenue would be earmarked for housing, losses in commercial and industrial assessment could put upward pressure on property tax rates.

In the short run, the fee would reduce developers' profits and the City's ability to extract benefits from density bonuses. The extent of this impact depends upon the number of developers who may wish to make use of Section 36, given the existence of a linkage fee, the actual fee level, and the specific bonusing arrangements.

Two issues to monitor are Metro's property tax reassessment and consideration of the use of development charges by both Metro and the City. Either of these could decrease the growth of commercial development, therefore reducing linkage fee revenue.

8. A Linkage Fee System for the City of Toronto

In Section 3.4, a series of questions was posed to assist in clarifying the implementation issues of a linkage fee system. In this chapter, these are revisited with a view to providing (a) a summary of the findings of this study and (b) a platform upon which to build a linkage fee system in Toronto should Council wish to proceed.

8.1 For which land uses can a linkage fee be empirically established?

This study firmly establishes linkage between the production of new commercial space in the City of Toronto and the need for affordable housing.[60](Section 5.1)

8.2 For which land uses, and at what level, does the municipality wish to establish a fee?

This study finds that a fee of between $6.16 (profound need) and $19.71 (full policy-defined need) per gross square foot of new commercial development in the City or Toronto is empirically justified. (Section 5.5)

8.3 Should the level of the fee be determined in relation to market impacts, the need for affordable housing, or both?

While a fee as high as $19.71 may be empirically justifiable on the grounds of need, any fee larger than $10 could have serious impacts on the commercial real estate market in the City.(Section 7.4)

A fee of, say, $6 could be portrayed by the City as either (a) providing for 100% of the need experienced by the lowest 15% of linkage-related households or (b) providing for 50% of the need experienced by the lowest 30%. The latter portrayal is preferable in our judgement, even though the actual dollar amounts and impacts would be identical.

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[60] Commercial is used in the sense employed in the City's building permit tracking system and therefore includes office, retail, entertainment and hotel uses.

8.4 Should the fee be a one time charge or paid over a number of years?

There is no difference between the impact of a one time charge or that of a charge spread over several years with equal present value. Therefore this decision should be based on: (a) positioning the linkage fee as an exaction as opposed to a tax, (b) the structure of similar exactions, and (c) administrative convenience. All three considerations strongly favour a one-time fee. We recommend that the fee be assessed and collected along with the building permit fee to ensure an accurate and consistent assessment of gross floor area.

8.5 Should in-kind payments of value equal to the fee be accepted?

The City of Toronto has shown considerable creativity and flexibility with respect to in-kind payments under density bonusing. We expect that the City would wish to maintain that flexibility if a system of linkage fees were to be developed.

8.6 What type of in-kind fees would be acceptable, units or land?

To be consistent with 8.5, the City of Toronto should not foreclose on either option.

9. Recommendations

The chapters above include:

- a review of theoretical concepts
- a comparison of policy alternatives
- the development of a measured linkage relation for Toronto
- the specification of a fee level for several growth scenarios
- a review of likely impacts of such a fee system.
- a summary of findings

These support the following recommendations.

Recommendation 1:

> Depending on the definition of need, there is a firm basis for establishing a linkage fee between $6.16 and $19.71 per gross square foot on all new commercial development in the City of Toronto.

Recommendation 2:

> To mitigate against adverse impacts in the commercial real estate market, the fee should not exceed $10.00 per square foot.

Recommendation 3:

> The fee should provide one-half the measured linkage for the appropriately defined need group.

Recommendation 4:

> The fee should be assessed on a one-time basis and collected at the same time as building permit fees.

Recommendation 5:

The fee should be implemented in a manner complementary to density bonusing and other policies for providing public benefits in exchange for development approval.

Recommendation 6:

Once established, the level of the fee should be indexed to the Statistics Canada's Construction Price Index--Toronto CMA series. The basis of its calculation should be periodically updated as new census data become available.

Recommendation 7:

At the City's discretion, in-kind payments in land and/or housing units should be accepted in lieu of the appropriate linkage fee. The net value of such payments should equal or exceed the linkage fee due.

Recommendation 8:

Council should move to implement a linkage fee at the earliest possible date.

APPENDIX 1: Current Affordability Measures

The following is an outline of the main measures of affordability which have been used most recently in Canada and the United States and a review of their strengths and weaknesses. The approaches vary depending on the purpose of each study but in general have attempted to determine:

(1) how much income is required to "afford" a certain price of home or, conversely

(2) what is the maximum affordable house price a certain type of household can afford, or

(3) how many households can afford a home at a specific price.

The variations in the approaches have resulted in a number of different measures being used to track affordability through time.

1. Affordability by House Type:

   Canadian Home Builders Association Affordability Index

   This one-time calculation measured affordability of a newly-built "typical entry level home" in 24 cities. That typical home was a matter of CHBA's judgement, the only restriction being that it not be a one or few-of-a-kind home. The affordability index was the ratio of gross debt service (GDS) to average annual households' incomes. The GDS (defined as principal, interest and taxes) was calculated for a five year, 90 per cent mortgage amortized 25 years.

2. Affordability by Household Type:

   Ontario Government Housing Policy Statement

   This definition singles out two household income classes in municipalities: those with incomes up to the 30th percentile and those with incomes between the 30th to 60th percentile. The Ontario government is proposing that 25 per cent of all new homes built be within price guidelines deemed affordable for those households.

   Thus annual maximum house prices are set for the given income brackets, based on a maximum monthly GDS of 30 per cent calculated with 25 per cent down payment and a mortgage amortized 25 years.

3. Affordability by Shelter to Income Ratios:

Canadian Home Builders Association Study by Clayton Research

This study estimated the extent of affordability problems for potential first-time buyers in 1986. It assumed 10 per cent down on a "modest house", whose value was estimated at the top of the first quartile MLS dwelling price for families and at the 10th percentile for non-families. The range of required income with maximum GDS ratios of 30 per cent for families and 35 per cent for non-families was calculated and compared against actual incomes of the renter population up to age 55.

National Association of Realtors (NAR) United States

This Association publishes every month two national indexes for the resale market: the National Housing Affordability Index and the First-Time Homebuyer Affordability Index. An index of 100 indicates the respective home buyers have 100 per cent of the income to quality for a loan to purchase a designated home.

The National Housing Affordability Index measures the income flexibility of the median-income family to purchase the median priced home with 20 per cent down. The index is the ratio of household income to the income necessary to qualify for a conventional mortgage, amortized 30 years, where payments do not exceed 25 per cent of income.

The First-time Homebuyer Affordability Index measures the income flexibility of renter families, aged 25-44 years, earning that group's median income, to purchase a home priced at 85 per cent of the median priced home, with 10 per cent down. The income necessary to qualify for a mortgage, was based on interest rates at a one-quarter per cent premium over prevailing rates, amortized 30 years, where payments do not exceed 25 per cent of income.

Lomas Mortgage (Detroit) Affordability Measure

This mortgage research company publishes an annual homes survey which also ranks 27 major metropolitan housing markets in the United States by affordability. Only those new and existing homes mortgaged under conventional financing are included.

The mortgage payment for the average-priced home is calculated based on 20 per cent down and a 30 year mortgage. Taxes and

insurance are added. The affordability measure is the ratio of the total monthly payment to average household incomes. The affordability threshold is a standard of 28 per cent.

Home Ownership and Housing Affordability Annual Report Joint Centre for Housing Studies (Harvard and MIT)

This annual report on United States housing reports the "cost burden" of home ownership as a ratio of estimated housing costs to household income. Costs of ownership are for the median-priced house and are the sum of: (net after tax) mortgage payments based on 20 per cent down and a 25 year mortgage plus cash costs for fuel, utilities, maintenance, repairs, (net) property tax, insurance and transaction costs. Also included is the opportunity cost of the down payment (estimated as that year's yield on Treasury Bonds) less expected house price appreciation based on the preceding three-year average.

CMHC's Measure of Affordability

CMHC's current approach is to analyze affordability from two perspectives. The first assesses how affordable the average priced home is relative to the average income of home owners and the second is to compare how affordable a starter home is to the average renter. Both are done on a local market basis.

The measure of "average" affordability is expressed as the ratio of income required to carry the mortgage for an averaged priced house versus the actual average income. The calculations were based on a 25 year amortization, average 3 year mortgage rate, average MLS prices and 25 percent down payment. Average household income was derived from Census of Canada and Statistics Canada's Household, Income, Facilities and Equipment Surveys.

The measure of "starter home" affordability is expressed as the ratio of income required to carry the mortgage on a starter home (defined as the average priced NHA home) versus the average renter income. The average priced NHA home was selected as a starter home because it is the best historical measure of first time buyer activity in Canada. Approximately seventy percent of NHA borrowers are first-time buyers.

APPENDIX 2: Data Sources

DATA SOURCES USED IN THE LINKAGE STUDY

DATA	SOURCE
Building Data	
Permit Values, some Square Footages, by City, Central Area, by Commercial Institutional, Industrial, by Quarter	City Planning & Dev (CP&D)
Office space, vacancy rates, by quarter	Royal Lepage
Office Space, Occupancy, annual '75-'88 (adjusted data)	D. Nowlan
Price Data	
Office Building Price Index	Statistics Canada (SC) SC 67-002
Consumer Price Index (Toronto CMA)	SC 62-010
Employment Data	
Labour Force by Occupation Metro, CMA, City Clerical,Sales,Service,Total only	SC:LFS at CP&D
Labour Force by Industry, Unemployment Rates	CANSIM
Wages - Industrial Composite, CMA	SC via City
Housing Data	
Waiting List: Cityhome, Quarterly	CityHome
CityHome Stock of Units	City Housing Dept.
Waiting List: OHC for Metro only, Annual OHC Change in Stock	OHC
Residential occupancy data, 1978-88	CP&D
Housing occupancy analysis system	CP&D

Housing Requirements 1976-2001, Ontario and CMAs	CMHC
Social Indicators	
GWA Rolls, Metro, Quarterly	Metro CS
1986 Census, City, Metro, CMA 1981 " 1976 "	SC 95-164
Economic Indicators	
GDP, Prime, Mortgage Rates	CANSIM
Transportation Data	
1989 New Building Employees Survey (Place of Residence, Mode..)	Ryerson Team
1986 Census Work/Residence Flows	SC via Metro
1986 TTS Journey-to-Work Survey Work/All/24 hr./Peak	DMG/Joint Program in Transportation
1971,1981 Census Work/Residence Flows By Occupation	Joint Program
Income Data	
1986 Provincial Low Income Cut-off tabulations for economic families and unattached individuals by occupation	SC 93-118
1986 Toronto CMA Income by Occupation for employed persons	SC via CP&D

APPENDIX 3: Converting Variables to Measures: Data Requirements, Sources, and Adjustments

Data were required over a reasonably long time series on the building of commercial space in the City, on various labour force categories for the City, Metro, and the CMA. Data on control variables, prices, and other standardizing variables were also needed, in order to deal with building space, money invested in building that space, and other factors during a period of rapid inflation, an economic downtown and two growth periods. The impacts of inflation, demographic, business cycles, and other confounding effects had to be eliminated in order to reveal the linkage.

The Canada Labour Force Survey is carried out monthly in Census Metropolitan Areas across the country. Using stratified household sampling and telephone interviewing, Statistics Canada is able to report a wide variety of labour force characteristics at the CMA and municipal levels. In this study, the labour force data relied upon were quarterly, and were provided to the City of Toronto through a special tabulation, which included occupation of the respondent, as well as labour force participation and unemployment rates. Data were available for the City of Toronto, the Metropolitan Municipality, as well as for the CMA.

Based on analysis of the statistical fluctuations in the labour force data, and based on the availability of building data no more often than each quarter, it was decided to base the model on quarterly data, and to confirm our examination of labour force levels to the largest geographical areas for the regression estimate. Because the proportion of workers, including lower wage workers, who commute from outside the City and from outside Metro, is steadily increasing, the final model was based on the size of the CMA lower-wage workforce.

The choice of quarterly data on City of Toronto commercial building, combined with national, and CMA level labour force and economic data capture seasonal effects, business cycles, and provided enough data points to handle any number of control variables that were appropriate.

APPENDIX 4: An Alternative: The Direct Method Analyzing Waiting Lists

As noted earlier, if data on the individuals who require housing assistance were available (including, but not limited to, those households on waiting lists for social housing), and that data included employment history and location of work, it would make a direct estimate of the impacts of development much easier. The lack of this sort of data, does not completely rule out a direct estimate of the expressed demand for social housing. During the course of the study a vigorous attempt was made to explore the data on demand for public housing (waiting list data). Despite cooperation from the Ontario Housing Corporation (for Metropolitan Housing Authority units) and CityHome (for the City units), the data we obtained were unsatisfactory for time series analysis.

The problem in the waiting list data centred around the accumulation in each waiting list of inactive files (households who have found acceptable private accommodation, moved away, or otherwise become inactive). The two service providers (MTHA and CityHome) have not been able to eliminate these inactive households from waiting lists regularly, but instead have allowed them to accumulate until staff time permitted a mailing to all waiting list members, followed by a purge of inappropriate families. The time series data (quarterly for CityHome and annual for Metro Housing) were reviewed.

A "sawtooth" pattern was found in the CityHome data: with peaks just before a purge of inactive cases, and a trough just after. The data were adjusted in order to remove the inactive households in a gradual manner, in order to eliminate the inactive cases as they had built up. Presumably recent quarters in the waiting list also had inactive cases, but only by assuming that the rate of inactivity was similar to the pre-purge era could these cases be removed. The most satisfactory adjustment removed earlier peaks, but left current cases unadjusted.

The Metro Housing data were only available for year-ends. No clear pattern of purges was apparent. In order to combine the waiting lists of these two key agencies, artificial quarterly data were estimated for Metro Housing using curve fitting techniques.[61] This Metro Housing quarterly data were then added to the Cityhome data, producing an adjusted series of waiting lists over time. This allowed the investigators to carry out a direct estimate of the impacts of commercial development on waiting lists.

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[61]Higher order polynomials, such sixth-degree ones, were best.

While on the surface there appeared to be an estimate of a linkage between commercial development and waiting lists, a careful examination of the remaining errors around the estimate showed patterns typical of correlated errors in time-series data. When appropriate corrections were made to the waiting list data, so as to eliminate the correlated errors, the linkage relation was no longer statistically significant. Hence this direct estimate of linkage between commercial space and waiting lists was not used in developing the linkage fee system. What evidence there was suggested results that are consistent with the estimates reported in this report, which are based on the labour force, or indirect, method.

APPENDIX 5: Details of the Regression Model

Multiple regression analysis is a statistical method used to test a theoretical relationship of the following form:

$$Y = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4 + \epsilon$$

In this model:

- Y is known as the dependent variable
- the X's are independent or predictor variables
- the β's are unknown parameters, and
- ϵ is an unknown error term

The essential idea is that a linear combination of predictor variable values determines the value of the dependent variable with the error term accounting for inherent fluctuations in the relationship. Typically, the independent variable Y is of policy interest and the predictor variables (the X's) are a set of all variables thought to influence Y.

Given a set of actual observations of Y and the X's it is possible to estimate the following model:

$$\hat{Y} = b_0 + b_1 * X_1 + b_2 * X_2 + b_3 * X_3 + b_4 * X_4$$

Where:

- $\hat{Y}$ is the predicted value of the independent variable Y
- the b's are statistical estimates of the β's
- the X's are as before

There are many methods available to produce the estimate. The goal is to select one that ensures that the estimated b's are the "best" estimates possible of the true β's. The most common is the method of ordinary least squares (OLS) which produces "best" estimates as long as the underlying error term ϵ:

1. is normally distributed with zero mean and constant variance

2. does not vary systematically from observation to observation

Further conditions are:

3. that no important predictor variables are missing

4. that the presumed functional form (linear) is correct

5. that the X's are not "too" correlated with one another

Modern statistical software makes it easy to build estimates using any one of a number of methods and to check the results for conformity to these important conditions.

In this study we suspect an underlying theoretical model of the following form:

$$EMPLOYEES = \beta_0 + \beta_1 * COMMERCIAL + \beta_2 * PRIME + \beta_3 * FEMLFPART + \beta_4 * UNEMPLOYMENT + \epsilon$$

Where:

EMPLOYEES	The number persons employed in clerical, sales, and service jobs who live in the Toronto Census Metropolitan Area
COMMERCIAL	The amount of money spent on completed new commercial buildings in the City of Toronto, measured in millions of 1981 dollars
PRIME	The commercial prime interest rate
FEMLFPART	The female labour force participation rate in the Toronto CMA
UNEMPLOYMENT	The unemployment rate in the Toronto CMA

To test this model, a quarterly data set containing information on all five variables was assembled. The data span the period 1976-1989. With time series data like this, researchers often suspect a time-dependent pattern in the error term ϵ. This would be a violation of the second condition above,

namely, that error terms are independent of one another. The standard approach to this problem is to estimate the equation using ordinary least squares, check for this problem (autocorrelation) using the Durbin-Watson statistic, and take corrective action, if necessary.

In this study, OLS estimates produced a Durbin-Watson statistic of 1.23, indicating mild first-order autocorrelation. The iterated Yule-Walker method of estimation was then implemented to correct the problem. This yielded the following estimated model for the predicted dependent variable EMPLOYEES:

Variable	B Value	T Ratio	Prob ($\beta = 0$)
Intercept	156545.4	2.527	0.0132
COMMERCIAL	28.9	4.908	0.0001
PRIME	1980.0	3.000	0.0042
FEMLFPART	8777.8	7.399	0.0001
UNEMPLOYMENT	-5903.3	-4.624	0.0001

Regression R^2:	0.94
Total R^2:	0.96
Degrees of Freedom:	49

An examination of residuals from this model suggests that it is well-specified.

The model therefore accounts for a very high proportion (94%) of the variation in clerical, sales, and service employment. The parameter estimates have the expected signs and very small errors.

APPENDIX 6: A Spreadsheet for Projecting Incremental Housing Requirements

Linkage Forecasts Based on Clerical, Sales, and Service Occupations

CONSTANTS:

28.9	CMA Workers in clerical, sales and service jobs per $1 million ($'81) commercial construction in City
$51.75	1981 $/square foot commercial building costs
1.5	workers generated in CMA per 1000 square feet
16.1	workers generated in CMA per 1000 square meters

PARAMETERS:

0.32	Proportion of City workers living in City
5.0%	Real cost of borrowing
25	Amortization period in years
100%	Percent of measured linkage to be addressed by fee

KEY CENSUS PROPORTIONS AND PROBABILITIES:

Occupation	% of lower wage City workforce	% family member/ % unattached	headship probability	p<LICO
Clerical	0.45	0.8	0.63	0.06
		0.2	0.78	0.21
Sales	0.223	0.76	0.63	0.08
		0.24	0.78	0.25
Service	0.327	0.76	0.63	0.14
		0.24	0.78	0.47

FINANCIAL ANALYSIS:

Capital Costs for Family and Single Units

Family	Single	
50,000	50,000	Land
96,000	64,000	Construction
12,500	8,333	Parking
1,000	1,000	Landscaping
$159,500	$123,333	Total

Operating Revenue

$200	$150 average RGI monthly rent
150	125 monthly operating cost excluding debt service

====	====	
$50	$25	net monthly revenue to landlord
$8,553	$4,277	present value of net operating revenue

Required Subsidy

159,500	123,333	capital cost
(8,553)	(4,277)	less PV(net operating revenue)
========	========	
$150,947	$119,056	required subsidy per unit

PROFOUND NEED LINKAGE FEE:

$66.31 PER SQUARE METER ($ 1990)
$6.16 PER SQUARE FOOT ($ 1990)

DETAILED CALCULATIONS FOR PROFOUND NEED:

NOTE: Scenario 1 = 170K SQ. M. / Yr
Scenario 2 = 255K SQ. M. / Yr
Scenario 3 = 340K SQ. M. / Yr

SCENARIO	GFA Added ('000)	New CMA Workers	New City Workers
1	170	2737	865
2	255	4105	1298
3	340	5473	1731

CLERKS:

SCENARIO	City Clerks	Family Heads	Single Heads
1	389	195	61
2	584	293	91
3	779	391	121

SALES WORKERS:

SCENARIO	City Sales	Family Heads	Single Heads
1	193	92	36
2	289	138	54
3	386	184	72

SERVICE WORKERS:

SCENARIO	City Service	Family Heads	Single Heads
1	283	135	53
2	424	202	79
3	566	270	106

ECONOMIC FAMILIES BELOW LICO:

SCENARIO	Clerk Headed	Sales Headed	Service Headed
1	12	7	19
2	18	11	28
3	23	15	38

SINGLE PERSON HOUSEHOLDS BELOW LICO:

SCENARIO	Clerk Headed	Sales Headed	Service Headed
1	13	9	25
2	19	14	37
3	25	18	50

TOTAL HOUSEHOLDS BELOW LICO:

SCENARIO	Families	Single Person	Total
1	38	47	85
2	57	70	127
3	76	93	169

TOTAL SUBSIDY COSTS OF REQUIRED UNITS:

SCENARIO	Family	Single	Total
1	$5,729,308	$5,544,186	$11,273,494
2	$8,593,961	$8,316,279	$16,910,240
3	$11,458,615	$11,088,372	$22,546,987

NOTE: Scenario 1 = 170K SQ. M. / Yr
Scenario 2 = 255K SQ. M. / Yr
Scenario 3 = 340K SQ. M. / Yr

DETAILED BREAKDOWN FOR PROFOUND NEED

ANNUAL INCREASE IN COMMERCIAL SPACE (SQ.M.)		NEW WORKERS	865
		NEW FAMILIES	422
	LOW	FAMILIES IN NEED	38
	170,000	NEW SINGLES	149
		SINGLES IN NEED	47
		LINKAGE FEE	$6.16
		NEW WORKERS	1298
		NEW FAMILIES	633
	MEDIUM	FAMILIES IN NEED	57
	255,000	NEW SINGLES	224
		SINGLES IN NEED	70
		LINKAGE FEE	$6.16
		NEW WORKERS	1731
		NEW FAMILIES	844
	HIGH	FAMILIES IN NEED	76
	340,000	NEW SINGLES	299
		SINGLES IN NEED	93
		LINKAGE FEE	$6.16

APPENDIX 7: The Linkage / Other Revenue Tradeoff

If we use the City's midpoint growth projection of 2,734,800 square feet (255,000 square meters) and assume that the introduction of a fee will reduce growth by 10%(which is a very high estimate)[62], the revenue from the linkage fee would be $14,273,247 (2,459,420 sq. ft. * $6.16). The loss in other revenue would be for 273,480 sq.ft.

Assuming 70% office space, 30% retail, and one parking space for per 1000 sq. ft., the total revenue lost per year will be $1,049,853. If we assume that 1/3 of this revenue $346,446 (the percentage generated from the business assessment) is not required to provide services for the development, the present value provides the value of the lost assessment. The present value (at 10%) of $346,446 over a twenty five year period is $3,144,685.

The net revenue gain is therefore in the order of $11 million.

Although this represents a conservative estimate of lost revenue, it does show that with a 10% reduction in growth the fiscal benefits from the linkage fee are positive relative to the cost of lost revenue from new commercial development.

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[62]Given that a fee of $6.16/sq.ft. would only increase total project costs by 1.3%, a decrease of commercial development by 10% is far greater than could occur with a fee of this magnitude. However, it does illustrate that even with a larger fee which would lead to a 10% reduction, the imposition of the fee is still fiscally acceptable in total revenue terms.

APPENDIX 8: Existing Linkage Programs[63]

EXISTING LINKAGE PROGRAMS

CITY	YEAR ENACTED	APPLIED TO	TYPE OF CONTRIBUTION
A. Mandatory Linkage			
San Francisco	1980	new/reno office anywhere in City if over 50,000 sq. ft.	$5.34/sq.ft. or 38.6 units per 100,000 sq.ft.
Boston	1983	any development requiring zoning relief over 100,000 sq. ft., charge for over 100,000 only	$5.00 per sq. ft.
Madison	1985	new development outside the target area for housing provision	--
Princeton	1984	all nonresidential developments	$3.39 per sq. ft.
Palo Alto	1984	all new commercial and industrial development	$2.43/ sq. ft. or sponsor direct construction of units

[63]Information for this table was obtained from: Alterman, Rachelle. Evaluating Linkages and Beyond, (Cambridge: Lincoln Institute for Land Policy, 1989); and Porter, Douglas ed., Downtown Linkages, (Washington: The Urban Institute, 1985).

B. Incentive-Based Linkage

Hartford	1986	commercial projects	"schedule of bonuses",residential ratio 1:8, or $5.00/sq. ft. of bonus floor
New York	1987	residential projects in specified zoning districts	higher floor area ratios in exchange for building or rehab of low income housing, or contribution
Seattle	1984	downtown office buildings	building, rehab or cash contributions to housing, $10 to $15.30/sq.ft. of bonus space depending on location
Miami	1983	nonresidential projects in specified zoning districts	.15 gross sq. ft. of affordable housing per sq. ft. of bonus space or cash, $4.00 or $6.67/sq. ft. depending on zone
Cambridge	1988	nonresidential projects in excess of 30,000 which need special permits	$2.00/sq. ft. to housing trust fund

C. Negotiated (Mandatory) Linkage

Jersey City	1985	retail & commercial projects	negotiation guidelines for Dept of Housing and Econ Development, $3.25/sq. ft. for projects over 100,000 sq. ft.
Cambridge	1985	all development	the negotiation policy may be used in addition to the above noted incentive policy
Santa Monica	1981	all development	negotiation has been used, also fees of $2.25/sq. ft. for the first 15,000 sq. ft. and $5.00/sq. ft. for the remainder have been collected, or units built to a value equal to the fees

D. Municipalities Rejecting or Considering Linkage Programs

Stamford	1986	rejected a "housing impact payment"
New York	1984	rejected mandatory linkage policy
Chicago	1984	on policy agenda since 1984

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